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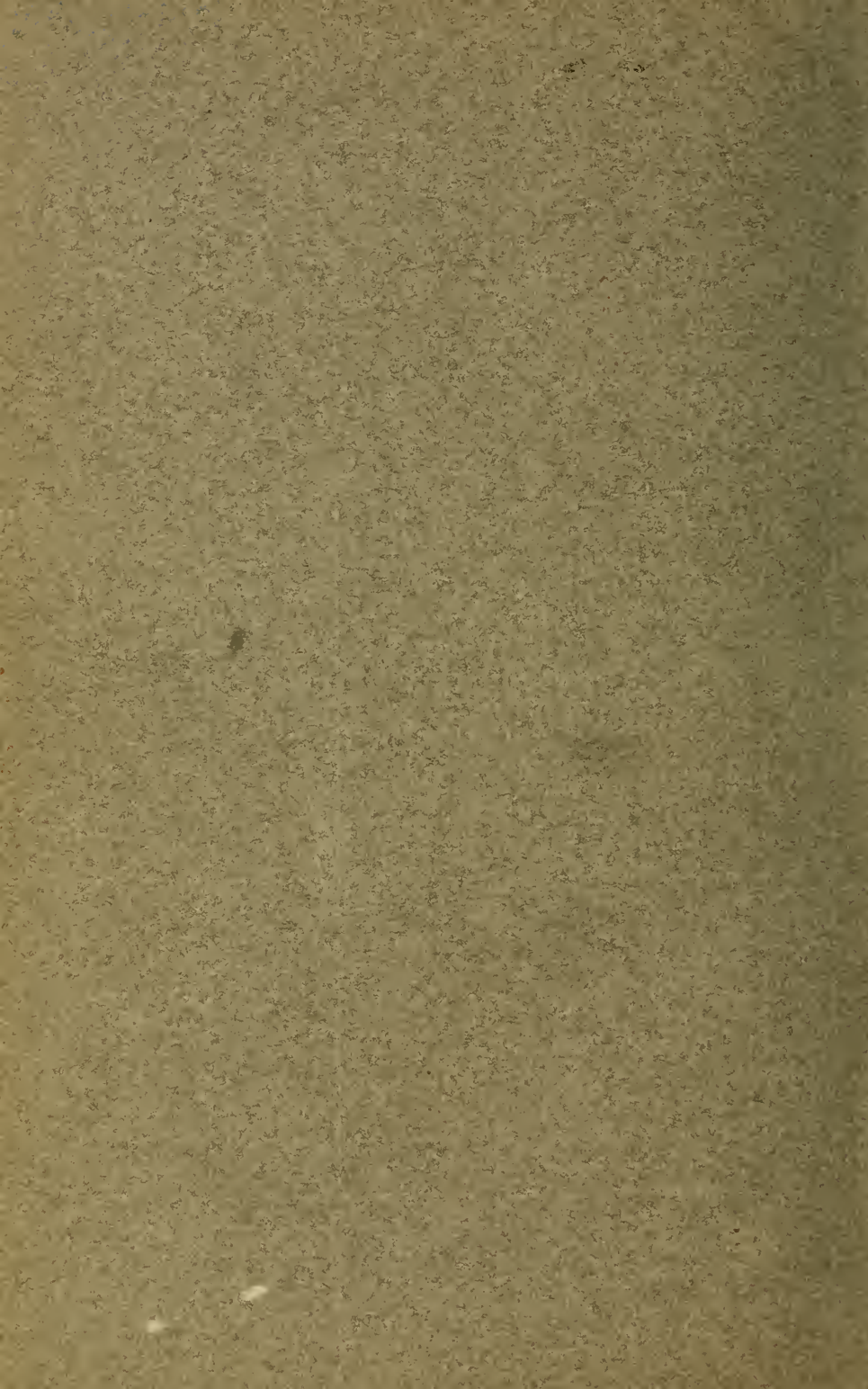
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U. S. DEPARTMENT OF LABOR
CHILDREN'S BUREAU

JULIA C. LATHROP, Chief

INFANT MORTALITY

RESULTS OF A FIELD STUDY
IN JOHNSTOWN, PA., BASED ON
BIRTHS IN ONE CALENDAR YEAR

BY

EMMA DUKE

INFANT MORTALITY SERIES No. 3

Bureau Publication No. 9



WASHINGTON
GOVERNMENT PRINTING OFFICE
1915



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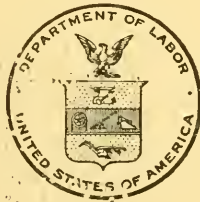
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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, August 24, 1914.

SIR: I transmit herewith a statement of the first study in the field inquiry contemplated by the Children's Bureau into the subject of infant mortality in the United States. This study was made in Johnstown, Pa., during the first year of the bureau's existence, and is submitted as the first item in a proposed series of studies into infant mortality to be made in a number of typical communities throughout the country.

The city of Johnstown was selected because of its interest as a type of town in which there are no large factories employing women and because its size and its good birth registration permitted a study by the staff which the bureau could at first assign to this work.

The subject of infant mortality was chosen, first, because of its obvious importance as recognized by the fact that it is the first subject mentioned in the law creating the bureau; second, because of its fundamental value to further work of the bureau; and third, because it was practicable to make a single study, complete in itself, which would yet form part of an integral whole as it became possible to extend the field inquiry.

The restricted and tentative character of this first study is recognized. Its results will be constantly compared and collated with those of following similar studies in other communities. Doubtless the method of the general field inquiry may be modified from time to time, but the essential basal material of the schedules will be comparable throughout.

Infant mortality is a subject of profound social importance. The modern view has ceased to be fatalistic; infant mortality is now regarded as a preventable waste, injurious to survivors as well as destructive to infants, and cruelly increasing the burden of rearing a family. Sir Arthur Newsholme, the great English authority, has said, "Infant mortality is the most sensitive index we possess of social welfare and of sanitary administration, especially under urban conditions." Nationally, the United States has as yet no means of measuring the extent and significance of its infant mortality. If it were practicable, it would be illuminating to visit each one of the

2,500,000 children who, it is estimated, are born in this country yearly, and to take note of the varying social and economic conditions under which some 300,000 of them die and the others survive. As this is manifestly impossible, the nearest approach is to consider certain communities typical of the whole, and it is believed that in the course of a few years' study such data can be presented as will give the United States a fairly adequate measure of the conditions under which American-born infants survive or perish, and of the possibilities of modifying those conditions by local action.

Brilliant work for infant welfare has been done in many localities, notably by the public-health authorities and volunteer organizations of the larger cities, and incidental thereto much information regarding infant mortality has been gathered; but in the greater part of the country, especially in the smaller cities and rural communities, it is as yet hardly recognized that the problems which confront the crowded quarters of the great cities may also exist in less congested areas.

In accordance with the plans for a general inquiry into infant mortality, Mr. Ethelbert Stewart, the first statistical expert of the Children's Bureau, directed the preparation of the schedule and the field work at Johnstown.

This study considers all the babies born in Johnstown within a single calendar year. Since the work was begun in January, 1913, it was necessary to select the year 1911 as the latest in which all babies born could have attained a full year of life.

Mr. Stewart preceded the agents by a visit to Johnstown in which he explained the purposes of the inquiry, and the courtesy with which the agents were received by the general public—the press, the clergy, civic and volunteer organizations, and especially by the mothers themselves—was a valuable factor in making the inquiry successful.

Above all, the bureau wishes to express its obligation to the mothers of Johnstown, without whose generous understanding and help the inquiry could not have been conducted. Their good will is evidenced by the fact that, out of 1,553 mothers visited, only two refused information. The readiness with which the information was given undoubtedly depended upon the appeal to the mothers to cooperate with the Government in the effort to learn how to save babies' lives and to the fact that the agents could show that the information given was not to be used in any personal way.

The schedules were taken by Miss Emma Duke, Miss Sophia Vogt, and Miss Emily Miladofsky, special agents of the bureau, while the preliminary work of transferring to the schedules the information contained on the State records of birth was done by Mr. A. V. Par-

sons, special agent of the bureau, who also took the photographs reproduced.

Just as the work of filling out the schedules was being completed in Johnstown, Mr. Stewart was transferred to the Bureau of Labor Statistics, and his loss, together with other bureau exigencies, delayed the completion of the report. Miss Emma Duke has written the text and she has had the assistance of Miss Sophia Vogt and Miss Ella A. Merritt in making the tabulations. Mr. Lewis Meriam, Assistant Chief of the Children's Bureau, was interested in the inquiry from the start, and on Mr. Stewart's transfer was placed in charge of the statistics. The bureau wishes to acknowledge its indebtedness to all those who have aided in the preparation of this study by preliminary advice and by criticism of the schedule or manuscript.

The method of the inquiry is in one respect unique, so far as we are aware. Instead of taking as its point of departure the death records of children who have not survived their first year, the birth records are first secured for all children born within a certain calendar year, and each child is then traced through the first 12 months of life, or as much of that period as he survives, in order to obtain information as to the conditions which surround all the children of the town born during the given year. It is evident that this inquiry can be carried on effectively only in communities which have birth registration, and its extension to include typical units throughout the country must depend largely upon the further extension of birth registration.

The law creating the bureau provided for no medical officer upon the staff, and the inquiry was necessarily restricted to a consideration of family, social, industrial, and civic factors. The original material of the schedule was secured through personal interviews between individual mothers and the women agents. As the text shows, certain facts regarding the civic surroundings of the families were secured in addition to the interviews, but the chief value of the inquiry lies in the information afforded by the mothers. It is plain, however, that a study thus limited must omit certain important considerations. It is not fair nor practicable to enter a home and ask questions regarding conditions which, if they exist, are considered personally humiliating. Hence it was necessary to omit questions bearing on matters of personal character or behavior, and therefore to omit all consideration of two recognized factors in infant mortality—alcoholism and venereal disease. It is anticipated that the bureau will be in a position later to consider these and other factors, notably those connected with the employment of mothers and with industrial diseases, by methods independent of family inquiry.

The emphasis of the inquiry, as shown throughout the text, was upon certain of the more obvious economic, social, and civic factors which have surrounded the lives of the children of Johnstown born

within the given year. Civic action can remedy defective sewerage and scavenger systems and dirty unpaved streets which are instrumental in creating conditions that endanger the lives of infants. The extension of city water to all houses; improved methods for sewage disposal, garbage collections, and general scavenging; the paving of streets and inhabited alleys; the widening of alleys; the improved grading of streets and alleys; the relief of house and lot congestion; the abolition of wells and yard privies; sewer connection for all houses; the abatement of the smoke nuisance—all of these are needed improvements for the infant health and the general health of Johnstown.

But the public's responsibility does not end merely in remedying such conditions as those just noted. There is a growing tendency on the part of municipalities to accept responsibility for furnishing information and instruction to its citizens. Some cities have reduced their infant mortality rate by having expectant mothers instructed in prenatal care; others by sending instructive visiting nurses, immediately after the birth of a child, into homes that need them. Other means which have been found effective in reducing excessive infant mortality rates are baby welfare stations, consultation stations for expectant and nursing mothers, and the distribution of sound literature on prenatal care, the care and feeding of infants, the care of milk, and other hygienic matters.

The importance of a pure milk supply in reducing infant mortality has been repeatedly demonstrated. The direct effects of impure milk on the health of Johnstown babies could not be ascertained in this investigation, but the careless handling of milk was obvious, and at the request of the Johnstown Board of Health and the local health officer the Children's Bureau secured the cooperation of the Bureau of Animal Industry of the Department of Agriculture in making a comprehensive investigation of the milk supply in Johnstown. The findings of the experts, L. B. Cook, C. E. Clement, and B. J. Davis, printed in full on pages 89 to 93 of this report (Appendix III), justify the citizens' campaign for clean milk now under way in Johnstown.

In many directions public spirit is active in Johnstown. The city is awakening to its needs and to its responsibilities as well. It supports a strong civic club and other associations which are studying ways and means to proceed. Its newspapers are virile and progressive and plans are being made to remedy insanitary conditions. Through private effort a visiting nurse has been secured to instruct mothers in the care of their homes and their children.

The Johnstown report shows a coincidence of underpaid fathers, overworked and ignorant mothers, and those hazards to the life of the offspring which individual parents can not avoid or control

because they must be remedied by community action. All this points toward the imperative need of ascertaining a standard of life for the American family, a standard which must rest upon such betterment of conditions of work and pay as will permit parents to safeguard infants within the household. Toward the slow working out of the essentials of such a standard it is hoped that the bureau's continued studies into infant mortality may contribute.

While the bureau has not yet determined upon all the units of the inquiry, it is the purpose at present to study localities outside those great urban areas whose spectacular needs have secured costly and effective work by municipal and volunteer organizations. Such work should be equally valuable and, on the whole, equally applicable in smaller towns and even in rural communities. That similar problems and needs exist also in our less congested areas is proved by the 1913 report of the New York State Health Commission, which has made plain the unfavorable health showing of the State as a whole as compared with that of the city of New York. This report and the studies upon which it is based have furnished the impetus for new legislation which extends throughout the State certain measures for improving the health of children which have already proved effective in the largest city of the State. In various parts of the world the history of intelligent efforts to surround babies with healthful conditions shows a progressively lessening infant mortality rate and leads to the belief that the problems of infant mortality can be solved.

Sir Arthur Newsholme, who has already been quoted above, says in the Forty-Second Annual Report of the Local Government Board (1912-13), "It is obvious that the complex problems involved (excessive infant and child mortality) can not be effectively stated in a single report, and that investigation is called for in nearly every center of excessive mortality."

It is therefore desired to pursue this inquiry in various typical communities throughout the country so that the facts may secure popular attention. Clearly the law creating the Children's Bureau, framed by experts in child welfare, embodies the conviction that if the Government can "investigate and report" upon infant mortality, the conscience and power of local communities can be depended upon for necessary action.

Respectfully submitted.

JULIA C. LATHROP, *Chief.*

Hon. WILLIAM B. WILSON,
Secretary of Labor.

INFANT MORTALITY: JOHNSTOWN, PA.

INTRODUCTION.

The term infant mortality, used technically, applies to deaths of babies under 1 year of age. An infant mortality rate is a statement of the number of deaths of such infants in a given year per 1,000 births in the same year. Some countries include stillbirths in making the computations, but this method is not generally followed in this country nor has it been followed in this report.

Ordinary procedure is to compare the live births in a single calendar year with the deaths of babies under 12 months of age occurring in that same year, even though those who died may not have been born within the calendar year of their death. The infant mortality rates in this report, however, have not been computed on the usual basis, but for the purpose of securing greater accuracy in measuring the incidence of death this bureau has considered, in making the computation, only so many of the babies born in the year 1911 as could be located by its agents, and has compared with this number the number of deaths within this group of babies who died within one year of birth, even though some of these deaths may have occurred during the calendar year 1912.¹

Infant mortality can be accurately measured in no other way than by means of a system of completely registering all births as well as all deaths. In 1911 the United States Bureau of the Census regarded the registration of deaths as being "fairly complete (at least 90 per cent of the total)" in 23 States, but the same degree of completeness in the registration of births was found only in the New England States, Pennsylvania, and Michigan, and in New York City and Washington, D. C. An exact infant mortality rate for the United States as a whole can not be computed owing to this generally incomplete registration. In the 1911 census report on mortality statistics,² however, the infant mortality rate is estimated at 124 per 1,000 live births. How this estimated rate compared with the computed rates for other countries is shown in the following summary:

¹ For more detailed description of method see Appendix II, pp. 86 to 88.

² Bulletin 112, Bureau of the Census, p. 23.

DEATHS OF CHILDREN UNDER 1 YEAR OF AGE PER 1,000 LIVE BIRTHS, BY QUINQUENNIAL PERIODS FROM 1901 TO 1910, AND ALSO FOR THE SINGLE CALENDAR YEARS 1909 AND 1910.¹

COUNTRY.	1901 to 1905	1906 to 1910	1909	1910
Chile.....	306	315	315	313
Russia (European).....	(²)			
Austria.....	215			
Hungary.....	212	204	212	194
Prussia.....	190	168	164	157
Jamaica.....	174	191	174	188
Spain.....	173			
Ceylon.....	171	189	202	176
Italy.....	168		155	
Japan.....	154		166	
Servia.....	149			
Belgium.....	148		137	
Bulgaria.....	148			
France.....	139		120	
England and Wales.....	138	117	109	105
The Netherlands.....	136	114	99	108
Switzerland.....	134		115	
Finland.....	131	117	111	118
Scotland.....	120		108	
Denmark.....	119		98	
Province of Ontario.....	114	127	131	123
Ireland.....	98	94	92	95
Australian Commonwealth.....	97	78	72	75
Sweden.....	91		72	
Norway.....	81		72	
New Zealand.....	75	70	62	68

¹ From the Seventy-third Annual Report of the Registrar General of Births, Deaths, and Marriages in England and Wales (1910). London, 1912.

² Available only for the period from 1896 to 1900, when it was 261.

When it had been decided by the Children's Bureau to make infant mortality the subject of its first field study and to include all babies born in a given calendar year, regardless of whether they lived or died during their first year, advice and cooperation were enlisted of mothers, physicians, nurses, and others experienced in the care of children, and also of trained investigators and statisticians, in the preparation of a schedule which was submitted to them for criticism.

With its limited force and funds it was not possible for the Children's Bureau to extend its inquiries throughout the entire United States. It was therefore decided to make intensive studies of babies born in a single calendar year in each of a number of typical areas throughout the country that offered contrasts in climate and in economic and social conditions, the results to be eventually combined and correlated. It was necessary to restrict the choice of the first area to a place of such size as could be covered thoroughly within a reasonable time by the few agents available for the work.

Johnstown, Pa., was the first place selected. It is in a State where birth registration prevails, and hence a record of practically all babies could be secured; it is of such size that the work could be done by a small force within a reasonable period, and it seemed to present conditions that could with interest be contrasted with conditions typical of other communities. Moreover, the State commissioner of health and the State registrar of vital statistics were both

working zealously to enforce birth-registration laws; both were actively interested in reducing infant mortality, and they welcomed a study of the subject in their State. In Johnstown the mayor, the president of the board of health, the health officer, and other local officials all showed the same spirit of hearty cooperation and interest.

Inasmuch as the study was confined to babies born in a single calendar year and work was begun in January, 1913, the latest year in which the babies could have been born and still have attained at least one full year of life was 1911.

Work was begun on January 15, 1913, with the transcription from the original records at Harrisburg of the names and other essential facts entered on the birth certificates of babies born in 1911, and, if the baby had died during its first year of life, items on the death certificate were also copied.

In the meantime the people of Johnstown through the press, and through the clergy in the foreign sections, had been informed of the purpose and plan of the investigation. Without the friendly spirit thus aroused and the interest manifested by the Civic Club and other organizations the work could not have been brought to a successful issue. The investigation was absolutely democratic; every mother of a baby born in 1911, rich or poor, native or foreign, was sought, and it is interesting to note refusals were met with in but two cases.

The original plan was to limit the investigation to those babies born in the calendar year selected whose births had been registered, the purpose being to secure facts concerning a definite group and not to measure the completeness of birth registration. Shortly after beginning the work, however, agents of this bureau were told that the Servian women in Johnstown seldom had either a midwife or a physician at childbirth; that they called in a neighbor or depended upon their husbands for help at such times, or that they managed alone for themselves, and that therefore their babies usually escaped registration. The omission of these babies meant the exclusion of a number of mothers in a group that was too important racially to be omitted from an investigation embracing all races and classes. Accordingly a list of babies christened in the Servian Church and born in the year 1911 was secured and an attempt made to locate them. In addition an agent called at each house in the principal Servian quarter to inquire concerning births in 1911. A number of unregistered babies of Servian mothers were thus found and included in the investigation.

The agents were sometimes approached by mothers of babies born in 1911 who resented being omitted from the investigation simply for the reason that their babies' births had not been registered. The agents were therefore instructed to interview mothers thus accidentally encountered and to include their babies in the investigation. But no

additional baptismal records were copied nor was a house-to-house canvass made of the city; in fact, no further means were resorted to to locate unregistered babies for the purpose of including them in the investigation.

There were 1,763 certificates copied at Harrisburg, and 1,383 of the babies named in them were reached by the agents. In addition, 168 babies for whom there were no birth certificates, but who were located in the ways just noted, were included, making a total of 1,551 completed schedules secured.

Of the 380 not included in the investigation there were 149 who could not be located at all; 220 others had moved out of reach—that is, into another city or State; 6 of the mothers had died; 3 could not be found at home after several calls, and 2 refused to be interviewed.

From the following summary of data recorded on the certificates of the 380 unlocated babies just referred to it appears that the infant mortality rate (134.3) among them is almost the same as that (134) shown in Table 1 for babies included in the investigation. In reality, however, it is perhaps a little higher, as some of these babies no doubt died outside of Johnstown and their deaths were recorded elsewhere.

NATIONALITY OF MOTHER.	Total births.	Live births.	Still-births.	SEX OF BABY.		ATTENDANT AT BIRTH.			Certificate showing deaths during first year.
				Male.	Female.	Physician.	Mid-wife.	Unknown.	
Total.....	380	350	30	227	153	158	189	33	47
Native.....	134	118	16	76	58	122	5	7	12
Foreign.....	246	232	14	151	95	36	184	26	35
Slovak, Polish, etc.....	43	41	2	27	16	4	37	2	3
Croatian and Servian.....	13	11	2	10	3	.....	7	6	5
Magyar.....	1	1	.....	1	.....	.....	1	.....	.....
German.....	8	8	.....	6	2	2	5	1	2
Italian.....	41	39	2	26	15	3	36	2	4
Syrian and Greek.....	7	6	1	3	4	3	4	.....	1
British.....	7	7	.....	3	4	5	2	.....	.....
Austrian (not otherwise specified).....	123	116	7	73	50	19	89	15	20
Not reported.....	3	3	.....	2	1	.....	3	.....	.....

RELATION OF INFANT MORTALITY TO ENVIRONMENT.

NEIGHBORHOOD INCIDENCE.

The rate of infant mortality is regarded as a most reliable test of the sanitary condition of a district. (Sir Arthur Newsholme, *Elements of Vital Statistics*, p. 120. London, 1899.)

Johnstown is a hilly, somewhat Y-shaped area of about 5 square miles which spreads itself out into long, narrow, irregularly shaped strips, detached by rivers and runs and steep hills. In some places it is not over a quarter of a mile wide, but its extreme length is

about 4 miles. The city is composed of 21 wards and is an aggregation of what were formerly separate unrelated boroughs or towns. The names of these different sections, together with the numerical designations of the wards included in or comprising them, are shown in the following table. This table gives for each section not only the total population according to the Federal census of 1910, but also the number of live-born babies included in the investigation and the number and proportion of deaths among such babies during their first year.

TABLE 1.—DISTRIBUTION OF POPULATION, LIVE BIRTHS, AND DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE ACCORDING TO SECTION OF JOHNSTOWN, FOR ALL CHILDREN INCLUDED IN THIS INVESTIGATION.

SECTION OF CITY AND WARD.	Population, 1910. ¹	Total live-born babies.	Deaths during first year of babies born in 1911.	Infant mortality rate.
The whole city.....	55,482	1,463	196	134.0
Down-town section (wards 1, 2, 3, 4).....	5,944	80	4	50.0
Kernville (wards 5, 6).....	6,070	104	6	57.7
Hornerstown (ward 7).....	4,476	109	17	156.0
Roxbury (ward 8).....	2,862	85	10	117.6
Conemaugh Borough (wards 9, 10).....	5,282	136	16	117.6
Woodvale (ward 11).....	3,945	107	29	271.0
Prospect (ward 12).....	1,893	55	11	200.0
Peelerville (ward 13).....	1,443	18	1	(²)
Minersville (ward 14).....	2,403	72	9	125.0
Cambria City (wards 15, 16).....	8,706	310	55	177.4
Moxham (ward 17).....	5,735	157	14	89.2
Morrellville (wards 18, 19, 20).....	5,757	194	16	82.5
Coopersdale (ward 21).....	966	36	8	(²)

¹ Federal census of 1910.

² Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

To learn where the babies die is perhaps the first step in solving the infant mortality problem. The modern health officer recognizes this and generally has in his office a wall map upon which are indicated sections, wards, city blocks, and sometimes even houses. As infant deaths are reported, pins are stuck in the map in the proper places, a density of pins on any part of the map indicating, of course, where deaths are most numerous, although the percentage of infant deaths may not be the highest. The next table shows the comparative frequency of infant deaths in each of the several sections of Johnstown as well as the rate of infant mortality, total population, proportion of foreign population, proportion of foreign mothers, and total births in the year 1911 in each.

TABLE 2.—RELATIVE RANK OF SECTIONS OF JOHNSTOWN, ACCORDING TO INFANT MORTALITY RATE FOR ALL CHILDREN INCLUDED IN THIS INVESTIGATION, TOTAL POPULATION, TOTAL FOREIGN BORN, PERCENTAGE OF FOREIGN BORN IN TOTAL POPULATION, NUMBER OF BABIES BORN ALIVE IN 1911, PROPORTION OF FOREIGN-BORN MOTHERS, AND NUMBER OF INFANT DEATHS.

SECTION OF CITY AND WARD.	RANK OF THE SEVERAL SECTIONS OF THE CITY ACCORDING TO—						
	Infant mortality rate.	Total population. ¹	Total foreign-born population. ¹	Per cent of foreign-born population. ¹	Babies included in investigation.		
					Number live born.	Proportion of foreign mothers.	Number of infant deaths.
Woodvale (ward 11).....	1	8	2	1	6	2	2
Prospect (ward 12).....	2	11	8	5	11	5	7
Cambria City (wards 15, 16).....	3	1	1	2	1	1	1
Hornertown (ward 7).....	4	7	10	11	5	11	3
Minersville (ward 14).....	5	10	4	3	10	3	9
Conemaugh borough (wards 9, 10).....	6	6	3	4	4	4	4
Roxbury (ward 8).....	7	9	12	13	8	12	8
Moxham (ward 17).....	8	5	6	8	3	7	6
Morrellville (wards 18, 19, 20).....	9	4	7	9	2	6	5
Kernville (wards 5, 6).....	10	2	9	12	7	13	11
Down town (wards 1, 2, 3, 4).....	11	3	5	7	9	9	12
Peelorville (ward 13).....	(2)	12	11	6	13	10	13
Coopersdale (ward 21).....	(2)	13	13	10	12	8	10

¹ According to Federal census of 1910.

² Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

The highest infant mortality rate, 271, is found in the eleventh ward, known as Woodvale, although this is neither the most populous ward nor the one having the largest number of births. The infant mortality rate here, however, is double the rate for the city as a whole and more than five times as great as it is for the most favorable ward.

This is where the poorest, most lowly persons of the community live—families of men employed to do the unskilled work in the steel mills and the mines. They are for the most part foreigners, 78 per cent of the mothers interviewed in this ward being foreign born.

Through Woodvale runs the main line of the Pennsylvania Railroad. To the north of the tracks rises a steep hill, toward the top of which is Woodvale Avenue, the principal street north of the railroad. (See plate A.) Sewer connection is possible for the houses along this avenue, as a sewer main has recently been installed, but the people have not in all cases gone to the expense of having the connection made, and in other cases where they have done so sometimes only the sinks are connected with the sewer and the yard privy is retained.

On the streets above Woodvale Avenue dwellings are more scattered and the appearance is more rural. A few of the families still have to depend upon more or less distant springs for their water, although city water is quite generally available throughout Woodvale.

The streets near the bottom of the hill, as Plum Street, for example, are so much below the level of the sewer mains that they can not be properly drained into the sewer. Private drain pipes from houses are buried a few feet below the surface and protrude from the sides of the hills, dripping with house drainage which flows slowly into ditches and forms slimy pools. (See Plates B and C.)

None of the streets on the north side of the railroad track are paved; sidewalks and gutters are lacking. In cold weather the streets are icy and slippery and even dangerous on account of the grade. In warm weather they are frequently slippery and slimy with mud.

Maple Avenue is the principal street of that part of Woodvale lying to the south of the railroad tracks, and it is the only properly paved and graded street in Woodvale. The streets on this side of the tracks, however, are not in as bad a condition as those to the north, nor are the drainage and general sewerage conditions as offensive as north of the tracks, but many of the streets are nevertheless muddy and filthy. (See Plate D.)

Prospect ranks next to Woodvale in infant mortality, having a rate of 200. This section, lying along a steep hill and above one of the big plants of the steel company, has not a single properly graded, drained, and paved street. The sewers are of the open-ditch type, and the natural slope of the land toward the river is depended upon for carrying off the surface water that does not seep into the soil. The closets are generally in the yard and are either dry privies or they are situated over cesspools. Some of the people who live on the lower part of the slope have wells sunk directly in the course of the drainage from above. (See Plate E.)

Cambria City, which is composed of the two most populous wards of Johnstown, has the third highest infant mortality rate, 177.4. It has a large foreign element, as is evidenced by the fact that 90.6 per cent of the mothers interviewed were foreign born. It is situated along the river, between the hills of Minersville and Morrellville, and somewhat to the north of Prospect. The sewage from other residential sections and from the steel mills above them empties into the river at this point. In warm, dry seasons the river is low, flows slowly, and forms foul-smelling pools.

Sewer connection is possible for most of the houses in Cambria City, although all are not connected. Some, on the streets bordering the river, have private drain pipes that empty out into the stream. Others have their kitchen sinks connected with the sewer but still retain yard privies, which, of course, are not sewer connected.

There is considerable crowding of houses on lots, rear houses being commonly built on lots intended for but one house. Density of population and house congestion are greater here than elsewhere in the city.

The streets of Cambria City are somewhat better graded and more generally paved than those of Woodvale, but muddy streets and unpaved sidewalks nevertheless exist here. Broad Street, however, which is the business thoroughfare and runs through the center of the section, is the widest and best constructed street in Johnstown. Bradley Alley, on the other hand, running the length of Cambria City and parallel to Broad Street, is the most conspicuous example in the city of a narrow lane or alley used as a residence street. A number of small dwellings, generally housing more than one family, have their frontage on this alley, which is 19 feet 10 inches in width and without sidewalks. It is unpaved and in bad condition, generally being either muddy or dusty and littered with bottles, cans, and other trash. (See Plates F and G.)

Hornerstown has an infant mortality rate of 156, ranking fourth among the several sections of Johnstown in this respect. It has a fairly prosperous and somewhat suburban appearance, but its comparatively high infant mortality rate can perhaps be partly accounted for by the bad street conditions and the fact that refuse of all sorts is dumped into the shallow river at this point.

Minersville is a district where a high rate would be expected from prevailing conditions. The rate is 125, or less than the average for the city but more than double that for the most favorable sections. This ward is built on a hill and so located that the rising clouds of grit-laden smoke from the steel mills envelop it much of the time. Only one street in this section is well paved, and this is seldom clean. Houses on some of the streets near the top of the hill are not sewer connected, and streams of waste water trickle down the hill and give rise to unpleasant odors. (See Plates H and I.)

Conemaugh Borough, with an infant mortality rate of 117.6, ranks sixth in this respect among the sections into which Johnstown has been divided. It comprises wards 9 and 10 and begins at the edge of the downtown section and spreads upward over the hills to the southwest. Some of the houses on streets near the top of the hill are not sewer connected, and streams of water constantly trickle down the numerous alleys and streets that descend the hill. (See Plate J.) This section makes a very unfavorable first impression because of the open drainage and of the many dirty, badly paved streets. (See Plate K.) Unlike some of the other wards, it has a rather evenly distributed population and is without the vast uninhabited areas and acutely congested spots found in some other sections. On the whole there is little crowding on the lots and there are many good-sized yards. One-third of the population is foreign born. Of these the Italians are the most numerous. Despite certain ugly spots this section has not the unwholesome atmosphere that characterizes Woodvale and to a lesser extent Prospect, Cambria City, and Minersville.

The infant mortality rate of 117.6 per thousand in Roxbury is the same as that of Conemaugh Borough. For reasons not plainly apparent the rate here is higher than in Moxham, Morrellville, Kernville, or the down-town section, although it appears to be as favorably conditioned as these sections are from a social, economic, and sanitary standpoint. Here, as in all these sections, however, are many conditions not conducive to health. For example, parts of Franklin Street are in bad repair. The roadway is full of ruts and holes; the street, which is seldom sprinkled, is dusty in dry weather and muddy in wet weather, and in front of good houses along one section of this street runs an open ditch that receives house drainage.

Moxham has the eighth highest infant mortality rate, it being 89.2. Conditions here are generally rather favorable, although there is some complaint that at "high water" the sewage received by one of the runs in this section backs into some of the houses and then the sinks and water-closets overflow. Some of the homes here, near the city limits, are not supplied with city water but are still dependent upon wells and springs.

One of the three wards constituting Morrellville (ward 18) has a rural appearance; there is little house crowding on lots, big yards are common, and the streets are not paved. It is, however, marred by an offensive open-ditch sewer. Ward 19 of Morrellville has a more finished, less rural appearance. One of its objectionable features is that house drainage and the bloody waste of slaughterhouses are emptied into a shallow stream that flows through it. Ward 20 adjoins ward 19, and although it spreads out into a suburb it appears for the most part to be a comfortable and busy little village. Strayer's Run winds about here and receives sewage. The fact that it is without a guardrail in some places and that the railing is inadequate in others makes it a source of danger, and according to common report such accidents as children falling into the stream have occurred. The infant mortality rate for Morrellville is 82.5.

Kernville, a section with a considerable proportion of prosperous people, has a very favorable infant mortality rate, it being 57.7. Parts of this section, however, are on a hill stretching upward from Stony Creek, which is both unsightly and offensive in warm weather and when the water is low.

The down-town section, i. e., wards 1, 2, 3, and 4, where are to be found many of the best conditioned houses, the homes of many of the well-to-do people, has the lowest infant mortality rate in the city, it being but 50.

No infant mortality rate is presented in the tables for Coopersdale or for Peelorville. In the first-named section only 36 live-born infants were considered, and 8 of them died in their first year. But this high rate need not be considered as especially significant, as

the base number is small for such a computation. Coopersdale, however, is a suburban-appearing community in which one would expect the infant mortality rate to be low.

Peelerville is that part of the thirteenth ward which adjoins Prospect. A number of company houses are located here in which sanitary conditions are fairly good. The ward seems to have good drainage and no sewage nuisances. It is a community of wage earners and not of prosperous homes. Only 18 babies are included in the report for this district, one of whom died. With such a small base the infant mortality rate is not significant. (See Plate L.)

SANITARY CONDITIONS—SEWERAGE, PAVEMENTS, GARBAGE COLLECTIONS.

The general inadequacy of the sewerage system which has been indicated for the city as a whole is due in part to the fact that the city is largely an aggregation of sections, formerly independent of Johnstown itself, which have been annexed at different periods. Some of these boroughs had sewer systems more or less developed when they were taken into Johnstown; others had none. Not only the sewage of Johnstown but that of outlying boroughs pollutes the two shallow rivers, the Conemaugh and the Stony Creek, that flow through Johnstown. These are burdened with more waste than they can properly carry away, and the deposits which are left on the rocks in various sections of both rivers create nuisances that are the subject of much complaint, especially during the warm summer months. (See Plates M, N, O, and P.) At various times agitation has been started to improve the rivers which, as they flow through Johnstown, are, at the low-water stage, little better than swamps of reeking slime from the waste matter emptied into them from the hundreds of sewers along their banks. The pipes through which waste matter is emptied into the streams go only to the river edge, leaving their mouths uncovered and making the river beds at times pools of slowly flowing filth. These unsightly, malodorous conditions could be remedied if pipes were extended out into the middle of the streams, where the water is deeper.

With the exception of sprinkling a few wagon loads of lime along the banks of the streams each year, the city has done nothing to abate the nuisances arising from the use of these rivers as sewers or to restrain the coal and steel companies from allowing the drainage from mines and mills to enter the streams.

The engineer's records show that Johnstown had in 1911 a total of 41.1 miles of sewers and 36 sewer outlets, and 82 miles of streets, 52.7 miles being paved. The alleys in Johnstown are generally inhabited. They are narrow and without sidewalks. Their length is 52.88 miles and 47.35 miles are unpaved. The combined length of streets and

alleys is 134.88 miles. A comparison of this combined length of streets and alleys with the 41.1 miles of sewers having 36 outlets shows the inadequacy of the sewer system.

Not only is there an absence of paving, but the roadways are in very bad condition. A protest by "A Citizen" in the Democrat of June 26, 1913, says that there are nine months in the year when it would be impossible for the proposed fire-department automobile engines to attend a fire in the seventh, eighth, eleventh, seventeenth, eighteenth, nineteenth, twentieth, and twenty-first wards owing to the condition of the streets.

The scavenger system is also very defective. Citizens are required to pay for the removal of their ashes, trash, and garbage. Garbage collections are not made by the municipality, but by private contractors, and any sort of receptacle, covered or uncovered, can or box, is pressed into service by householders. It is by no means uncommon to find streets and alleys littered with ashes, garbage, bottles, tin cans, beer cases, and small kegs. Dirty streets are by no means exceptional in Johnstown, even though the State of Pennsylvania has a law (act of Apr. 20, 1905) which provides for the punishment of any person who litters paved streets. It reads, in part, as follows (sec. 7 of Pamphlet Laws, 227):

From and after the passage of this act, it shall be unlawful, and is hereby forbidden, for any person or persons to throw waste paper, sweepings, ashes, household waste, nails, or rubbish of any kind into any street in any city, borough, or township in this Commonwealth, or to interfere with, scatter, or disturb the contents of any receptacle or receptacles containing ashes, garbage, household waste, or rubbish which shall be placed upon any of said paved streets or sidewalks for the collection of the contents thereof.

Any person or persons who shall violate any of the provisions of this act shall, upon conviction thereof before any magistrate, be sentenced to pay the cost of prosecution and to forfeit and pay a fine not exceeding \$10 for each offense, and in default of the payment thereof shall be committed and imprisoned in the county jail of the proper county for a period not exceeding ten days.

In a report on infant mortality to the registrar general of Ontario, 1910, Dr. Helen MacMurphy says: "Improve the water supply, the sewerage system, and the system of disposing of refuse; introduce better pavements, such as asphalt, and at once there is a decline in infantile mortality." All these are sanitary features in need of great improvement in Johnstown, and unquestionably a lowered infant mortality rate would reward any efforts for their betterment.

HOUSING.

In Johnstown the so-called "double" house predominates, usually frame. The double house is in reality two semidetached houses built upon a single lot. Rows of three or more houses of two, three, or

four rooms each are common, and they are known locally as three-family, or six-family houses, as the case may be. Sometimes these are "rear houses," that is, they are built behind other houses that face the street, on the same lots and in fact are approached by way of a narrow alley running alongside the house that has its frontage directly on the street. For this type of house water-closets or privies are often in rows in the yard or court that is used in common by all families. (See Plates Q and R.) In some places they are too few in number to permit each family to have the exclusive use of one.

Johnstown has three or four comparatively high-grade apartment houses, and in several office buildings rooms are rented to families for housekeeping. These are generally taken by native families.

In one of these office buildings the two lower floors are used for business purposes and the two upper floors are given over entirely to tenement purposes. From 40 to 50 families live here, many of whom have but one room. To serve the 20 or 25 families on each floor there is one bath and toilet room for men and another for women. Adjoining the toilet rooms is a small room containing garbage cans and trash receptacles for the use of the tenants.

The sanitary conditions in some of the best tenements or apartments, however, are not up to the standards of other cities, and in those occupied by the poorer people conditions are much worse than are usually permitted to exist in cities having large tenement houses in great numbers, where a tenement-house problem is recognized as such and active efforts are made by the municipality to improve conditions.

An absolute measure of the importance of each single housing defect in a high mortality rate can not be secured from this study. But it is not without interest to note that in homes where water is piped into the house the infant mortality rate was 117.6 per thousand, as compared with a rate of 197.9 in homes where the water had to be carried in from outdoors. Or that in the homes of 496 live-born babies where bathtubs were found the infant mortality rate was 72.6, while it was more than double, or 164.8, where there were no bathtubs. Desirable as a bathtub and bodily cleanliness may be, this does not prove that the lives of the babies were saved by the presence of the tub or the assumed cleanliness of the persons having them. In a city of Johnstown's low housing standards, the tub is an index of a good home, a suitable house from a sanitary standpoint, a fairly comfortable income, and all the favorable conditions that go with such an income.

The same trend of a high infant mortality rate in connection with other housing defects is noted in the next table.

TABLE 3.—DISTRIBUTION OF LIVE BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO HOUSING CONDITIONS.

HOUSING CONDITIONS.	Live births.	DEATHS DURING FIRST YEAR.	
		Number.	Infant mortality rate.
Total.....	1,463	196	134.0
Dry homes.....	808	99	122.5
Moderately dry homes.....	336	47	139.9
Damp homes.....	319	50	156.7
Bath.....	496	36	72.6
No bath.....	965	159	164.8
Not reported.....	2	1	(1)
Water supply in house.....	1,173	138	117.6
Water supply outside.....	288	57	197.9
Not reported.....	2	1	(1)
City water available.....	1,333	176	132.0
City water not available.....	128	19	148.4
Not reported.....	2	1	(1)
Yard clean.....	801	80	99.9
Yard not clean.....	632	107	169.3
No yard.....	28	8	(1)
Not reported.....	2	1	(1)
Water-closet.....	739	80	108.3
Yard privy.....	722	115	159.3
Not reported.....	2	1	(1)

¹ Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

The following summary may be of interest in indicating some relation between infant mortality and cleanliness or uncleanness combined with dryness or dampness of homes:

TABLE 4.—DISTRIBUTION OF LIVE BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO CLEANLINESS AND DRYNESS OF HOME.

TYPE OF HOME.	Live births.	DEATHS DURING FIRST YEAR.	
		Number.	Infant mortality rate.
All types.....	1,463	196	134.0
Clean.....	943	107	113.5
Moderately clean.....	354	58	163.8
Dirty.....	166	31	186.7
Dry.....	807	99	122.7
Damp.....	656	97	147.9
Clean:			
Dry.....	581	61	105.0
Damp.....	362	46	127.1
Moderately clean:			
Dry.....	158	27	170.9
Damp.....	196	31	158.2
Dirty:			
Dry.....	68	11	161.8
Damp.....	98	20	204.1

Dirt is doubtless unhealthful, but the amount of ill health or the number of infant deaths caused by a home being dirty can hardly be measured, when, as is usually the case, the dirt is accompanied by so many other bad conditions arising from poverty. For example, a home in close proximity to railroad tracks or mills whose stacks send forth clouds of soot, smoke, and ashes is generally the poorly built home of those who have neither time nor means to secure and retain cleanliness under such difficulties.

Overcrowding in homes is another factor the relative importance of which can not be exactly determined, because of its close connection with other ills. But the degree of overcrowding is greatest in the small cheaper houses, those of one, two, three, or four rooms. The average number of persons per room in the homes of all live-born babies for whom the data were secured was found to be 1.38. Homes of four rooms were more numerous than those of any other size and they housed an average of 1.58 persons per room. The number of babies in homes of various sizes with the number of persons per room for homes of each size was as follows:

TABLE 5.—NUMBER OF BABIES LIVING IN HOMES OF EACH SPECIFIED SIZE, AND AVERAGE NUMBER OF PERSONS PER ROOM IN HOMES OF EACH SIZE.

SIZE OF HOME.	Live-born babies.	Persons per room.	SIZE OF HOME.	Live-born babies.	Persons per room.
All homes.....	1,463		8 rooms.....	43	0.83
1 room.....	33	4.42	9 rooms.....	22	.93
2 rooms.....	165	2.27	10 rooms.....	4	.88
3 rooms.....	147	1.83	11 rooms.....	4	.64
4 rooms.....	526	1.58	12 rooms.....	1	.75
5 rooms.....	222	1.22	13 rooms.....	1	.69
6 rooms.....	233	1.07	14 rooms.....	2	.43
7 rooms.....	38	.96	Not reported.....	22	.....

In homes of one, two, three, or four rooms or where the number of occupants ranged from 4.42 to 1.58 persons per room the infant mortality rate was 155, as compared with a rate of but 101.8 in larger homes, where the number ranged from 1.22 to 0.43 persons per room.

The 1910 census returns show that the greatest overcrowding was in ward 15, where the average number of persons per dwelling was 9.9. Wards 16, 11, and 14 came next with rates of 8.3, 7.7, and 7.2, respectively. The infant mortality rate for these four wards is 190.2, which is over one-third more than the rate for the whole city.

The mortality rate among infants who slept in a room with no other person than their parents was much lower than among those who slept in a room with more than two persons. The babies that slept in separate beds also had a much lower infant mortality rate than those who did not sleep alone, as shown in the next table.

TABLE 6.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR AMONG BABIES SURVIVING AT LEAST 1 MONTH, AND INFANT MORTALITY RATE, ACCORDING TO CERTAIN CONDITIONS IN BABY'S SLEEPING ROOM.

CONDITIONS IN BABY'S SLEEPING ROOM.	BABIES WHO LIVED AT LEAST 1 MONTH.		
	Total.	Deaths during first year.	
		Number.	Rate per 1,000 of those who lived 1 month.
Total.....	1,389	122	87.8
Number of others sleeping in same room with baby:			
2 or less.....	600	40	66.7
3 to 5.....	725	71	97.9
Over 5.....	57	7	122.8
Not reported.....	7	4	(1)
Baby sleeping alone in separate bed:			
Yes.....	575	32	55.7
No.....	810	88	108.6
Not reported.....	4	2	(1)

¹ Total number of babies less than 50; base therefore considered too small to use in computing rate.

In presenting statistics on sleeping and ventilation, only the babies who lived at least one month have been considered, for the reason that so many deaths during the first month of life were due to prenatal causes.

The incidence shown in the foregoing table is significant, even though it can by no means be deduced therefrom that the health of a large proportion of babies was so impaired by sleeping with older and more or less unhealthy persons that death resulted. But irregular night feeding and overfeeding are undoubtedly harmful, and the mother is tempted to subject the baby to this when it sleeps with her and disturbs her rest.

Of the 1,389 babies who lived at least one month, 600, or 43.2 per cent, lived in homes where the baby slept in a room with not more than two other persons. The fact that the baby slept in a room with no more persons than its parents generally argues that the family's means permitted them to have one or more additional rooms for other members of the family, but in other cases, of course, merely that there were no other persons in the family.

Almost every home visited had means for good ventilation of the baby's room at night, yet but 604, or 43.5 per cent, of the 1,389 babies who lived at least a month slept at night in well-ventilated rooms—that is, in rooms where, according to the mother's statement, a window was open all night. Some mothers opened windows when the weather was neither cold nor damp; or opened them in a hall or room adjoining that where the baby slept; others emphatically stated

that at night the windows were "always shut tight." The babies subjected to differences of ventilation show corresponding variations in infant mortality rates.

TABLE 7.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE AMONG BABIES SURVIVING AT LEAST 1 MONTH, ACCORDING TO VENTILATION OF BABY'S ROOM.

VENTILATION OF BABY'S ROOM.	BABIES WHO LIVED AT LEAST 1 MONTH.		
	Total.	Died during first year.	
		Number.	Rate per 1,000 of those who lived 1 month.
Total.....	1,389	122	87.8
Good.....	604	17	28.1
Fair.....	392	36	91.8
Poor.....	390	66	169.2
Not reported.....	3	3	(1)

¹ Total number of babies less than 50; base therefore considered too small to use in computing rate.

A high death rate in badly ventilated homes can not be charged wholly to bad air. The mother who did not, or could not, provide proper ventilation was generally the mother without the means or the knowledge necessary to enable her to care for her baby properly in other respects, and yet the marked differences suggest that ventilation is itself a very important ally of the baby in its first year of struggle for existence.

In many rooms that were poorly ventilated, windows were not opened for the reason that the room was not properly heated and the houses themselves were flimsy and drafty. The problem in such houses is to keep warm. If the windows were frequently or constantly opened, the houses would be too cold to live in. In some localities the outside air is so laden with soot, ashes, dirt, and smoke that every effort is made to keep it out of the house.

The foreigners, who generally have the most miserable homes, are not dirty people who select bad living conditions through innate poor judgment, low standards, and lack of taste. The squalid homes which housed the natives and later the Germans and the Irish until the present type of immigrants came to do the more poorly paid work were the only homes available within the purchasing power of their low wages. The new immigrants demanded practically nothing and the owners did practically nothing in the matter of improving these homes, which naturally became more and more squalid as time went on. An excessive infant mortality rate and insanitary homes in unhealthful sections were found to be coexistent.

NATIONALITY.

GENERAL NATIVITY.

The investigation embraced 860 babies of native mothers (of whom 6 were negroes) and 691 babies of foreign mothers, making a total of 1,551. The infant mortality rate for the entire group was 134 per 1,000 live births; for the babies of native mothers 104.3, and for those of foreign mothers 171.3. The stillbirth rate for native mothers having children in 1911 was less than that for foreign mothers, being 52.3, as compared with 62.2 per 1,000 total births.

The line between the natives and foreigners is very sharply drawn in Johnstown. The native population as a rule knows scarcely anything about the foreigners, except what appears in the newspapers about misdemeanors committed in foreign sections. The report of the Immigration Commission¹ comments "on the attitude of the police department toward foreigners * * * with regard to Sunday desecration," and states that "the Croatians are accustomed to spend Sunday in singing, drinking, and noisy demonstrations. The police have been instructed to show no leniency on account of ignorance of the municipal regulations, and, without any attempt at explaining the laws, they arrest the offenders in large numbers." Again, it states: "They are arrested more often for crimes that make them a nuisance to the native population than for mere infractions of the law * * *. Few arrests are made for immorality among foreigners." "Sabbath desecration" is the crime foreigners are most frequently charged with.

Foreigners are employed largely in the less skilled occupations of the steel mills, which operate 24 hours a day, seven days a week. At the time the investigation was made some of the men in the steel mills worked for a period of two weeks on a night shift of 14 hours, then two weeks on a day shift of 10 hours, and back again to the night shift of 14 hours for another two weeks, and so on. When shifts were changed, one group of men was required to work throughout a period of 24 hours instead of for the usual 10 or 14 hour period and another group had 24 hours off duty. Some departments of the steel mills, however, shut down on Sundays, and in some departments for certain occupations an eight-hour day prevails, but these more favorable conditions do not prevail among the majority of the unskilled foreign workers whose homes were visited.

The foreigners who work on a 24-hour shift in a mill on one Sunday frequently "desecrate" their alternate free Sabbath by "singing, drinking, and noisy demonstrations," in spite of the known danger

¹ United States Immigration Commission Reports, Volume VIII, "Immigrants in Industries: Part 2, Iron and Steel Manufacturing in the East," p. 387. Reference is to Johnstown and is a very true picture of various immigrant institutions and of the comparative progress and assimilation of different races there. Although the immigration report was made five years before our investigation, conditions remain practically the same.

of arrest for "crimes that make them a nuisance to the native population" or for "Sabbath desecration," laws concerning which are strictly enforced in Johnstown; for example, children are not permitted to play in public playgrounds on Sunday and mercantile establishments are required to be closed on that day. Also, it is "unlawful for any person or persons to deliver ice cream, or to sell or deliver milk from wagon or by person carrying same, within the city on the Sabbath day, commonly called Sunday, after 12 o'clock m." The ordinance from which the foregoing sentence was quoted became a law on January 25, 1914.

SERBO-CROATIAN.

The foreign group having the highest infant mortality rate is the Serbo-Croatian¹ where, as shown in the next table, infant deaths numbered 263.9 per 1,000 live births.

TABLE 8.—DISTRIBUTION OF BIRTHS, LIVE BIRTHS, AND DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO NATIONALITY OF MOTHER.

NATIONALITY OF MOTHER.	Total births.	Total live births.	DEATHS DURING FIRST YEAR.	
			Number.	Infant mortality rate.
All nationalities.....	1,551	1,463	196	134.0
Native.....	860	815	85	104.3
Foreign.....	691	648	111	171.3
Slovak, Polish, etc.....	394	367	65	177.1
Serbo-Croatian.....	76	72	19	263.9
Italian.....	75	71	13	183.1
German.....	53	47	6	(1)
Magyar.....	38	38	4	(1)
British.....	33	31	4	(1)
Syrian and Greek.....	12	12		
Hebrew.....	10	10		

¹ Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

The men of the Serbo-Croatian group are fine looking and powerful and are employed in the heavy unskilled work of the steel mills and the mines. They greatly outnumber the women of their race in Johnstown, and a man with a wife frequently becomes a "boarding boss"; that is, he fills his rooms with beds and rents out sleeping space to his fellow countrymen at from \$2.50 to \$3 a month each.

¹ A distinct and homogenous race, from a linguistic point of view, among Slavic peoples. They are divided into the groups "Croatian" and "Servian," on political and religious grounds, the former being Roman Catholics and the latter Greek Orthodox. Their spoken language is the same, but they can not read each other's publications, for the Croatians use the Roman alphabet, or sometimes the strange old Slavic letters, while the Servians use the Russian characters fostered by the Greek Church.

Three Krainers have also, for convenience, been included in this group. Krainers are Slovenians from the Austro-Hungarian Province of Carniola and are designated "close cousins of the Croatians but with a different though nearly related language" by Emily Greene Balch in her book entitled "Our Slavic Fellow Citizens."

The same bed and bedding is sometimes in service both night and day to accommodate men on the night and the day shifts of the steel mills.

The wife, without extra charge, makes up the beds, does the washing and ironing, and buys and prepares the food for all the lodgers. Usually she gets everything on credit and the lodgers pay their respective shares biweekly. These conditions exist to some extent among other foreigners, but are not as prevalent among other nationalities in Johnstown as among the Serbo-Croatians.

In a workingman's family, it is sometimes said, the woman's work-day is two hours longer than the man's. But if this statement is correct in general, the augmentation stated is insufficient in these abnormal homes where the women are required to have many meals and dinner buckets ready at irregular hours to accommodate men working on different shifts.

The Serbo-Croatian women who, more than any of the others, do all this work are big, handsome, and graceful, proud and reckless of their strength. During the progress of the investigation, in the winter months, they were frequently seen walking about the yards and courts, in bare feet, on the snow and ice-covered ground, hanging up clothes or carrying water into the house from a yard hydrant.

Whether it harmed them to expend their force and vigor as they did could not be determined in individual cases, but their babies are the ones who died off with the greatest rapidity, their infant mortality rate being 263.9, as compared with the rates of 171.3 for all the foreign; 104.3 for the natives; and 134 for the entire group as shown in Table 8. Excluding babies of Serbo-Croatian mothers, the infant mortality rate for babies of foreign mothers is but 159.7.

ITALIAN.

The Italian mothers visited in Johnstown bore 75 children in 1911, 4 being stillborn. The infant mortality rate among the live born was 183.1, the highest of any racial group excepting the Serbo-Croatian, where it was 263.9.

The Italians have been in Johnstown somewhat longer than the Serbo-Croatians and they seem to have a little firmer grip on the community life there. Their homes are a shade better, a trifle cleaner, and somewhat less crowded than those of the Serbo-Croatians, although their hygienic standards seem little if any higher and they rank no better in literacy. The women do not perform the arduous duties that are the lot of so many of the Serbo-Croatian women; they have not the robust physique of the latter and the men are not found in those branches of the steel industry which require the extraordinary strength possessed by the Serbo-Croatians. The occupations of the Italian fathers were found to be more diversified than those of the Serbo-Croatians, some being fruit, grocery, or cheese merchants;

steamship agents; bricklayers, carpenters, or workers at other skilled and semiskilled trades.

SLOVAK, POLISH, ETC.

The infant mortality rate in the group designated "Slovak, Polish, etc.," is 177.1. In this group are included all the Slavic races represented in the investigation excepting the Serbo-Croatian. The babies of Slovak¹ mothers were found to be most numerous, there being 276 of them. There were 108 babies of Polish,² 2 of Bohemian,³ and 7 of Ruthenian⁴ mothers. In addition, one baby of a Scandinavian (Danish) mother was included, not because Scandinavians bear the least racial resemblance to the Slavic races, but because the few Scandinavians in Johnstown happened to be on about the same economic footing as the "Slovak, Polish, etc."

The rate for this group is lower than that for either the Serbo-Croatians or the Italians, but it is nevertheless very high and one exceeded by only a few European countries, as shown by the table on page 12.

Some of the "Slovaks, Poles, etc.," live in the same squalid sections as the Serbo-Croatians, and in the same type of inferior houses, but on the whole they have been in Johnstown longer, are more prosperous, and are therefore beginning to move from Cambria City and Woodvale, where formerly practically all lived, into more desirable sections. Those who have been in this country longest and intend to stay here are buying homes with large yards in the less crowded sections and are raising vegetables and flowers. Others, however, still remain in poor neighborhoods and sometimes buy houses there for from \$300 to \$600 each, built close together on rented ground.

Lodgers are by no means uncommon among the people in this group, but usually their homes are cleaner, less crowded, and possessed of more comforts than those of the Serbo-Croatians and Italians.

OTHER NATIONALITIES.

The British⁵ infant mortality rate in Johnstown is 129 and the German 127.7. The British and Germans in Johnstown are more prosperous than the Slavic, Magyar, Jewish, Italian, Syrian, and Greek peoples, and regard the others as "foreigners." It was strange

¹ Slovaks occupy practically all except the Ruthenian territory of northern Hungary; also found in great numbers in southeast Moravia. They are the Moravians conquered by Hungary. In physical type no dividing line can be drawn between Slovaks and Moravians. It is often claimed that Slovak is a Bohemian dialect.

² The west Slavic race native to the former Kingdom of Poland. For the most part they adhere to the Roman rather than the Greek Orthodox Catholic Church.

³ The westernmost division or dialect of the Czech and the principal people or language of Bohemia. Czech is the westernmost race or linguistic division of the Slavic (except Wendish, in Germany), the race or people residing mainly in Bohemia and Moravia.

⁴ Also known as Little Russians; live principally in southern Russia; also share Galicia with the Poles but greatly surpassed by Poles in number. In language and physical type resemble Slovaks. Generally Greek Orthodox, but a few are Greek Catholics of the Roman Catholic Church, whose priests marry, and are separated from other Roman Catholics by marked religious differences.

⁵ English, Irish, Scotch, and Welsh included in the term British.

to hear a man, one who could hardly speak English, say, "We are not foreigners; we are Germans." The British and Germans occupy the same relative position economically that they occupy in the infant mortality scale with relation to other races.

In the Magyar¹ group, of 38 babies born alive 4 died in their first year, making an infant mortality rate of 105.3, which is almost as low as that for babies of native mothers. The Magyars are little if any better off than the other "foreigners" among whom they live, but they possess somewhat higher standards of living. They live in poor neighborhoods and have inferior houses, but their homes are cleaner and they themselves somewhat more alert, personally cleaner, and less illiterate than the other foreigners.

There were but 10 babies of Hebrew mothers and 12 of Syrian and Greek mothers; among these there were no deaths. These groups are too small numerically to be significant in a comparative race study of infant mortality.

STILLBIRTHS.

In all there were but 88 stillbirths included in the investigation. They were more numerous proportionately among the Germans than among the mothers of any of the other nationalities. No single nationality group, however, has a very large representation, and hence a comparison of the rate for one with that for another nationality is not as significant as the difference in rate between native and foreign mothers. Although a special study of the causes of stillbirths was not made in connection with a study of deaths of infants during their first year of life, nevertheless the incidence of these births among the different nationality groups is believed to be of some interest, and therefore shown in the next table.

TABLE 9.—DISTRIBUTION OF BIRTHS AND OF STILLBIRTHS, AND RATE OF STILLBIRTHS PER 1,000 BIRTHS, ACCORDING TO NATIONALITY OF MOTHER.

NATIONALITY OF MOTHER.	Total births.	STILLBIRTHS.	
		Number.	Rate per 1,000 births.
All nationalities.....	1,551	88	56.7
Native.....	860	45	52.3
Foreign.....	691	43	62.2
Slovak, Polish, etc.....	394	27	68.5
Serbo-Croatian.....	76	4	52.6
Italian.....	75	4	53.3
German.....	53	6	113.2
Magyar.....	38		
British.....	33	2	60.6
Syrian and Greek.....	12		
Hebrew.....	10		

¹ The race of Finno-Tatar origin that invaded Hungary about the ninth century and is now dominant here; commonly called Hungarians.

ATTENDANT AT BIRTH.

The native mother usually had a physician at childbirth; the foreign-born, a midwife. The more prosperous of the foreign mothers, however, departed from their traditions or customs and had physicians, while the American-born mothers, when very poor, resorted to midwives. The midwives usually charged \$5, and sometimes only \$3; they waited for payment or accepted it in installments, and they performed many little household services that no physician would think of rendering.

TABLE 10.—NUMBER AND PER CENT OF BIRTHS ACCORDING TO ATTENDANT AT BIRTH AND NATIVITY OF MOTHER.

NATIVITY OF MOTHER.	ALL BIRTHS.		MOTHER ATTENDED BY—							
			Physician.		Midwife.		Neighbor, relative, or friend.		No one.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
All.....	1,551	100.0	928	59.8	588	37.9	14	0.9	21	1.4
Native mothers.....	860	100.0	774	90.0	84	9.8	2	0.2	.....	.....
Foreign mothers.....	691	100.0	154	22.3	504	72.9	12	1.7	21	3.0

Two-thirds of those having no attendant were Serbo-Croatians. It was a Polish woman, however, who gave the following account of the birth of her last child:

At 5 o'clock Monday evening went to sister's to return washboard, having just finished day's washing. Baby born while there; sister too young to assist in any way; woman not accustomed to midwife anyway, so she cut cord herself; washed baby at sister's house; walked home, cooked supper for boarders, and was in bed by 8 o'clock. Got up and ironed next day and day following; it tired her, so she then stayed in bed two days. She milked cows and sold milk day after baby's birth, but being tired hired some one to do it later in week.

This woman keeps cows, chickens, and lodgers; also earns money doing laundry and char work. Husband deserts her at times; he makes \$1.70 a day. A 15-year-old son makes \$1.10 a day in coal mine. Mother thin and wiry; looks tired and worn. Frequent fights in home.

The infant mortality rate was lower for babies delivered by physicians than for those delivered by midwives or for those at whose birth no properly qualified attendant was present. This is not necessarily an indication of the quality of the care at birth, although in some cases the inefficiency of the midwife may have directly or indirectly caused deaths, just as in some instances a physician's inefficiency may have caused them. The midwife, however, is resorted to by the poor, and in their homes are found other conditions that create a high infant mortality rate.

TABLE 11.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO ATTENDANT AT BIRTH AND NATIVITY OF MOTHER.

ATTENDANT AT BIRTH AND NATIVITY OF MOTHER.	Total live births.	DEATHS DURING FIRST YEAR.	
		Number.	Infant mortality rate.
All births.....	1,463	196	134.0
Physician in attendance.....	866	87	100.5
Native mothers.....	730	68	93.2
Foreign mothers.....	136	19	139.7
Midwife in attendance.....	562	101	179.7
Native mothers.....	83	15	180.7
Foreign mothers.....	479	86	179.5
Other person or no attendant.....	35	8	(¹)
Native mothers.....	2	2	(¹)
Foreign mothers.....	33	6	(¹)

¹ Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

Frequently the Serbo-Croatian women dispense altogether with any assistance at childbirth; sometimes not even the husband or a neighbor assists. Over 30 per cent of the births among the women of this race took place without a qualified attendant. More than one-half of those delivered by midwives, less than one-fifteenth of those delivered by physicians, and about one-fifth of those delivered without a qualified attendant had babies who died in their first year of life, as shown in the next tabulation:

TABLE 12.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, ACCORDING TO ATTENDANT AT BIRTH, FOR BABIES OF SERBO-CROATIAN MOTHERS.

ATTENDANT AT BIRTH.	ALL BIRTHS TO SERBO-CROATIAN MOTHERS.		Live births.	Deaths during first year.
	Number.	Per cent.		
Total.....	76	100.0	72	19
Physician.....	31	40.8	28	2
Midwife.....	22	28.9	21	12
Other person.....	9	11.8	9	2
No one.....	14	18.4	14	3

Fifteen of the 19 Serbo-Croatian women whose babies died under 1 year of age kept lodgers.

In Johnstown the midwife is resorted to principally by the poor. Recent laws that the State is now trying to enforce require that the standard for the practice of midwifery be raised. If this can be done midwives might become definitely helpful persons in the community. One or two of the intelligent graduate midwives in Johnstown have

been an educational force among the foreign mothers for some years past. On the other hand there were others who were so dirty and so ignorant that they were a menace to the public health.

MOTHERS.

LITERACY.¹

There are differences in the infant mortality rate between the babies of literate and the babies of illiterate mothers; between those with mothers who can speak English and those with mothers who can not; and between babies of the mothers who have been in this country for a considerable period and those of the newer arrivals. Comparisons of this nature are confined to the foreign mothers, as only three cases of illiteracy were found among native mothers, and the other comparisons would not, of course, be applicable in any case to native mothers.

The next table shows that the infant mortality rate among the children of illiterate foreign mothers was 214, or 66 per thousand greater than the rate among literate foreign mothers.

TABLE 13.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, INFANT MORTALITY RATE, AND NUMBER AND PER CENT OF STILLBIRTHS, ACCORDING TO LITERACY OF FOREIGN MOTHERS.

LITERACY OF FOREIGN MOTHERS.	Total births.	Live births.	STILLBIRTHS.		DEATHS DURING FIRST YEAR.	
			Number.	Per cent.	Number.	Infant mortality rate.
Foreign mothers.....	691	648	43	6.2	111	171.3
Literate.....	445	419	26	5.8	62	148.0
Illiterate.....	246	229	17	6.9	49	214.0

ABILITY TO SPEAK ENGLISH.

The next table shows that babies whose mothers can not speak English were characterized by a more unfavorable infant mortality rate than other babies.

TABLE 14.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, INFANT MORTALITY RATE, AND NUMBER AND PER CENT OF STILLBIRTHS, ACCORDING TO ABILITY OF FOREIGN MOTHER TO SPEAK ENGLISH.

ABILITY TO SPEAK ENGLISH.	Total births.	Live births.	STILLBIRTHS.		DEATHS DURING FIRST YEAR.	
			Number.	Per cent.	Number.	Infant mortality rate.
Foreign mothers.....	691	648	43	6.2	111	171.3
Speak English.....	263	247	16	6.1	36	145.7
Can not speak English.....	428	401	27	6.3	75	187.0

¹ By literacy is meant ability to read and write in any language and not simply in English.

YEARS IN THE UNITED STATES.

In addition to a consideration of the babies according to their mothers' ability to speak English, it is of interest to note the infant mortality rates among babies whose mothers have been in this country for different periods of time.

TABLE 15.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO LENGTH OF RESIDENCE OF FOREIGN MOTHER IN THE UNITED STATES.

YEARS IN THE UNITED STATES.	Total live births.	DEATHS DURING FIRST YEAR.	
		Number.	Infant mortality rate.
Foreign mothers.....	648	111	171.3
5 years or less.....	168	36	214.3
Over 5 years.....	480	75	156.3

The high infant mortality rate for the children of newer immigrants, illiterates, and those who can not speak English is perhaps affected by the fact that they are at the same time generally of the poorest families and are housed in the most insanitary and unhealthful part of the city.

AGE.

The age of the mother is frequently believed to be a factor in the health of the child. The highest infant mortality rate was found to be that for the group of babies with mothers over 40 years of age, and the lowest for babies of mothers from 20 to 24 years of age.

TABLE 16.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, INFANT MORTALITY RATE, AND NUMBER AND PER CENT OF STILLBIRTHS, ACCORDING TO AGE OF MOTHER.

AGE OF MOTHER.	Total births.	Live births.	STILLBIRTHS.		DEATHS.	
			Number.	Per cent of total.	Number.	Infant mortality rate.
All mothers.....	1,551	1,463	88	5.7	196	134.0
Under 20.....	105	95	10	9.5	13	136.8
20 to 24.....	476	454	22	4.6	55	121.1
25 to 29.....	410	391	19	4.6	56	143.2
30 to 39.....	480	449	31	6.5	61	135.9
40 and over.....	80	74	6	7.5	11	148.6

The youngest mothers have a higher stillbirth rate than other mothers, and the oldest group of mothers has the next highest rate. In this connection not only the foregoing table is of interest, but

also Table XII on page 70, based upon the entire reproductive histories of the mothers included in this study. As all the children borne by these mothers are included, the base numbers in the latter table are larger and the figures therefore somewhat more significant.

BABY'S AGE AT DEATH AND CAUSE (DISEASE) OF DEATH.

A baby who comes into the world has less chance to live one week than an old man of 90, and less chance to live a year than one of 80.—*Bergeron*.

The most dangerous time of life is early infancy; even old age seldom has greater risk. Death strikes most often in infancy. The Johnstown babies died during their first year of life at the rate of 134 per 1,000 born alive, and they paid their heaviest toll in their very earliest days. If the total of 196 deaths had been distributed evenly throughout the 12 months, 8.3 per cent of the babies would have died each month and 25 per cent during each quarter. But instead of that 37.8 per cent died in the first month; 9.2 per cent in the second, and 8.2 per cent in the third, or over 55 per cent in the first quarter.

TABLE 17.—NUMBER AND PER CENT DISTRIBUTION OF DEATHS OF BABIES, BY AGE AT DEATH.

AGE AT DEATH.	DEATHS OF BABIES OF ALL MOTHERS.	
	Number.	Per cent distribution.
Total deaths in first year.....	196	100.0
First quarter.....	108	55.1
First month.....	74	37.8
First week.....	45	23.0
Less than 1 day and 1 day.....	30	15.3
2 days.....	4	2.0
3 to 6 days.....	11	5.6
Second week.....	14	7.1
Third week.....	7	3.6
Fourth week.....	8	4.1
Second month.....	18	9.2
Third month.....	16	8.2
Second quarter.....	42	21.4
Third quarter.....	31	15.8
Fourth quarter.....	15	7.7

The large number of deaths in the first few hours or days of life indicates that many babies are born with some handicap and that in many instances the mother has been subjected to some condition which resulted in the birth of a child incapable of withstanding the ordinary strain of life. Of the 45 babies who died in Johnstown less than a week after birth, 38 died of prematurity, congenital debility or malformations, or injuries received at birth. In one other case

the cause of death was given as "bowel trouble" and in six other cases it was not clearly defined. In addition to the 45 babies just referred to as having died in their first week, 12 died later either from prematurity or from congenital defects.

Of the deaths from causes arising after birth, 52 were attributed by the attending physicians to diarrhea and enteritis, 50 to respiratory diseases, and 44 to some other or to some ill-defined cause.

TABLE 18.—DISTRIBUTION OF DEATHS DURING FIRST YEAR AND INFANT MORTALITY RATE, ACCORDING TO CAUSE OF DEATH AND NATIVITY OF MOTHER.

CAUSE OF DEATH.	DEATHS DURING FIRST YEAR OF BABIES OF—					
	All mothers.		Native mothers.		Foreign mothers.	
	Number.	Infant mortality rate.	Number.	Infant mortality rate.	Number.	Infant mortality rate.
All causes.....	196	134.0	85	104.3	111	171.3
Diarrhea and enteritis.....	52	35.5	17	20.9	35	54.0
Respiratory diseases.....	50	34.2	19	23.3	31	47.8
Premature births.....	24	16.4	11	13.5	13	20.1
Congenital debility or malformation.....	19	12.9	5	6.1	14	21.6
Injuries at birth.....	7	4.8	6	7.4	1	1.5
Other causes or not reported.....	44	30.1	27	33.1	17	26.2

The latest census report on mortality statistics characterizes diarrhea and enteritis as the "most important preventable cause of infant mortality" in the United States, and numerically at least it proves to be the most important cause of infant death in Johnstown.

Holt¹ says that one of the most striking facts about diarrheal diseases in infants is their prevalence during the summer season. In Johnstown the infant diarrheal deaths were least prevalent in the first quarter of the year, next in the second, next prevalent in the fourth, and most prevalent in the third or summer quarter.

TABLE 19.—DISTRIBUTION OF DEATHS, ACCORDING TO CAUSE OF DEATH AND QUARTER OF CALENDAR YEAR IN WHICH DEATH OCCURRED.

CAUSE OF DEATH.	All deaths.	QUARTER OF CALENDAR YEAR IN WHICH DEATH OCCURRED.			
		First.	Second.	Third.	Fourth.
All causes.....	196	54	29	74	39
Diarrhea and enteritis.....	52	3	5	32	12
Respiratory diseases.....	50	24	8	7	11
Premature births.....	24	7	5	9	3
Congenital debility or malformation.....	19	5	2	8	4
Injuries at birth.....	7	5	1	1	1
Other causes or not reported.....	44	10	8	18	8

¹ The Diseases of Infancy and Childhood, by L. Emmett Holt. p. 345. New York, 1912.

Our figures are too small to admit of broad generalizations or a very full discussion of infant deaths according to the period of the year.

This excess of infant deaths from diarrhea in the summer months has been established by statistics in many countries, and the cause of such an excess has been the subject of much discussion, but as yet there is no general agreement. Liefmann and Lindemann¹ conclude, however, that in this field of controversy there are certain facts which are at present well established, these being the dependence of the high summer mortality on methods of feeding, on hot weather, and on the living and social condition of the parents. The last factor mentioned by these authors, including as it does housing conditions, economic status, and degree of intelligence, is becoming more and more the subject of study and investigation. It has been shown that the distinctly harmful effect of hot weather on the infant is increased when the housing conditions are bad; in overcrowded homes with bad ventilation the indoor temperature may be many degrees higher than the outdoor temperature. The ignorance and carelessness of mothers has also been shown to increase the bad effect of hot weather. With hygienic care, including cool baths, much fresh air, and careful feeding, many infants are able to pass through extremely hot weather without diarrheal disturbances.

Respiratory diseases were reported as a cause of death with almost as great frequency as diarrheal diseases. As shown by Table 19, these deaths occurred principally in the colder months of the first and fourth quarters of the calendar year.

FEEDING.

Food is recognized as of such importance in relation to infant mortality that studies of this subject frequently resolve themselves into studies of feeding only. Invariably these demonstrate the truth of the statement of Dr. G. F. McCleary² that "in human milk we have a unique and wonderful food for which the ingenuity of man may toil in vain to find a satisfactory substitute." Many mothers, however, still fail to appreciate the risk their young babies face in being given any except the natural infant food, and consequently babies are in large numbers wholly or partly weaned from the breast in the earliest months of their lives.

¹ Liefmann, H., and Lindemann, H., Die Lokalisation der Säuglingsterblichkeit und ihre Beziehungen zur Wohnungsfrage. *Med. Klinik* 1912, pp. 8, 1074.

² *Infantile Mortality and Infants' Milk Depots.* London.

Breast feeding is far more general, comparatively, among the poorer mothers than among the well to do, as shown by the following summary which gives the number and per cent of babies of mothers with husbands earning varying incomes, who had been completely weaned from the breast when they were 3, 6, or 9 months of age, respectively. For each of the periods indicated the percentage completely weaned from the breast is much greater in the groups where earnings are highest.

TABLE 20.—DISTRIBUTION OF BABIES ALIVE AT 3, 6, AND 9 MONTHS OF AGE BY TYPE OF FEEDING AT EACH OF SAID AGES, ACCORDING TO ANNUAL EARNINGS OF FATHER AND NATIVITY OF MOTHER.

ANNUAL EARNINGS OF FATHER AND NATIVITY OF MOTHER.	BABIES LIVING AT AGE OF—								
	3 months.			6 months.			9 months.		
	Total.	Completely weaned from breast.		Total.	Completely weaned from breast.		Total.	Completely weaned from breast.	
		Num-ber.	Per cent.		Num-ber.	Per cent.		Num-ber.	Per cent.
Total.....	1,355	193	14.2	1,313	250	19.0	1,282	353	27.5
Under \$624.....	341	22	6.5	322	32	9.9	309	57	18.4
\$625 to \$899.....	358	48	13.4	351	63	17.9	342	85	24.9
\$900 and over ¹	629	114	18.1	616	146	23.7	608	201	33.1
Not reported ²	27	9	33.3	24	9	37.5	23	10	43.3
Mother native.....	765	155	20.3	747	195	26.1	735	251	34.1
Under \$624.....	69	10	14.5	66	13	19.7	65	18	27.7
\$625 to \$899.....	180	36	20.0	177	46	26.0	173	55	31.8
\$900 and over ¹	491	100	20.4	482	127	26.3	476	168	35.3
Not reported ²	25	9	36.0	22	9	40.9	21	10	47.6
Mother foreign.....	590	38	6.4	566	55	9.7	547	102	18.6
Under \$624.....	272	12	4.4	256	19	7.4	244	39	16.0
\$625 to \$899.....	178	12	6.7	174	17	9.8	169	30	17.8
\$900 and over ¹	138	14	10.1	134	19	14.2	132	33	25.0
Not reported ²	2			2			2		

¹ Includes those reported as earning "ample." "Ample," as used in this report has a somewhat technical meaning; when information concerning the father's earnings was not available and the family showed no evidences of poverty, the word "ample" was used. When, however, the family was clearly in a state of abject poverty, it was included in the group "Under \$521."

² Unmarried mothers' babies also included.

Breast feeding, wholly or in part, is continued for a longer period by foreign than by native mothers, as indicated in the preceding table, showing that 20.3, 26.1, and 34.1 per cent of the native mothers' babies as compared with 6.4, 9.7, and 18.6 per cent of the foreign mothers' babies had been weaned from the breast at the age of 3, 6, and 9 months, respectively.

Some additional details concerning the type of feeding of babies of native and foreign mothers are given in the next table.

TABLE 21.—NUMBER AND PER CENT OF BABIES AGED 3, 6; AND 9 MONTHS WHO RECEIVED SPECIFIED TYPE OF FEEDING, ACCORDING TO NATIVITY OF MOTHER.

TYPE OF FEEDING AND NATIVITY OF MOTHER.	AGE OF BABY.					
	3 months.		6 months.		9 months.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
All babies.....	1,355	100.0	1,313	100.0	1,282	100.0
Exclusively breast fed.....	987	72.8	616	46.9	220	17.2
Partly breast fed.....	175	12.9	447	34.0	709	55.3
Exclusively artificially fed.....	193	14.2	250	19.0	353	27.5
Native mothers' babies.....	765	100.0	747	100.0	735	100.0
Exclusively breast fed.....	512	66.9	307	41.1	87	11.8
Partly breast fed.....	98	12.8	245	32.8	397	54.0
Exclusively artificially fed.....	155	20.3	195	26.1	251	34.1
Foreign mothers' babies.....	590	100.0	566	100.0	547	100.0
Exclusively breast fed.....	475	80.5	309	54.6	133	24.3
Partly breast fed.....	77	13.1	202	35.7	312	57.0
Exclusively artificially fed.....	38	6.4	55	9.7	102	18.6

The following table shows that artificially fed babies die at a much more rapid rate than breast-fed babies. In the very earliest months exclusive breast feeding seems to be the only safe method. After four months the danger of giving some other food in addition to the breast milk does not seem to be so great.

TABLE 22.—DISTRIBUTION OF BABIES ALIVE AT END OF EACH MONTH, FROM SECOND TO TENTH, INCLUSIVE, ACCORDING TO TYPE OF FEEDING DURING EACH MONTH SPECIFIED, NUMBER OF DEATHS DURING FIRST YEAR, AND RATE PER 1,000 ALIVE IN EACH GROUP.

TYPE OF FEEDING AT TIME SPECIFIED.	LIVE-BORN BABIES.		
	Number alive at specified time.	Deaths during first year.	
		Number.	Rate per 1,000 alive at specified time.
Second month.....	1,389	122	87.8
Breast exclusively.....	1,181	85	72.0
Mixed (i. e., breast and other).....	77	6	77.9
Artificial (i. e., no breast milk).....	131	31	236.6
Third month.....	1,371	104	75.9
Breast exclusively.....	1,112	60	54.0
Mixed.....	98	9	91.8
Artificial.....	161	35	217.4
Fourth month.....	1,355	88	64.9
Breast exclusively.....	987	46	46.6
Mixed.....	175	10	57.1
Artificial.....	193	32	165.8
Fifth month.....	1,337	70	52.4
Breast exclusively.....	871	33	37.9
Mixed.....	253	10	39.5
Artificial.....	213	27	126.8

TABLE 22.—DISTRIBUTION OF BABIES ALIVE AT END OF EACH MONTH, FROM SECOND TO TENTH, INCLUSIVE, ETC.—Continued.

TYPE OF FEEDING AT TIME SPECIFIED.	LIVE BORN BABIES.		
	Number alive at specified time.	Deaths during first year.	
		Number.	Rate per 1,000 alive at specified time.
Sixth month.....	1,318	51	38.7
Breast exclusively.....	780	20	25.6
Mixed.....	310	10	32.3
Artificial.....	228	21	92.1
Seventh month.....	1,313	46	35.0
Breast exclusively.....	616	18	29.2
Mixed.....	447	10	22.4
Artificial.....	250	18	72.0
Eighth month.....	1,305	38	29.1
Breast exclusively.....	502	13	25.9
Mixed.....	541	11	20.3
Artificial.....	262	14	53.4
Ninth month.....	1,291	24	18.6
Breast exclusively.....	395	7	17.7
Mixed.....	611	10	16.4
Artificial.....	285	7	24.6
Tenth month.....	1,282	15	11.7
Breast exclusively.....	220	3	13.6
Mixed.....	709	8	11.3
Artificial.....	353	4	11.3

The next table differentiates between babies of native and foreign mothers, giving the statistics by three-month periods instead of by single months.

TABLE 23.—DISTRIBUTION OF BABIES ALIVE AT THE END OF 3, 6, AND 9 MONTHS, RESPECTIVELY, ACCORDING TO TYPE OF FEEDING, NUMBER OF DEATHS DURING FIRST YEAR, AND RATE PER 1,000 ALIVE IN EACH GROUP, BY NATIVITY OF MOTHER.

AGE OF BABY AND NATIVITY OF MOTHER.	Babies alive at age indicated.	BREAST FED EXCLUSIVELY.			MIXED FOOD: BREAST AND OTHER.			ARTIFICIAL FOOD: NO BREAST MILK.		
		Total.	Deaths in first year.		Total.	Deaths in first year.		Total.	Deaths in first year.	
			Number.	Rate per 1,000 alive at specified age.		Number.	Rate per 1,000 alive at specified age.		Number.	Rate per 1,000 alive at specified age.
ALL										
3 months....	1,355	987	46	46.6	175	10	57.1	193	32	165.8
6 months....	1,313	616	18	29.2	447	10	22.4	250	18	72.0
9 months....	1,282	220	3	13.6	709	8	11.3	353	4	11.3
NATIVE.										
3 months....	765	512	12	23.4	98	2	20.4	155	21	135.5
6 months....	747	307	2	6.5	245	1	4.1	195	14	71.8
9 months....	735	87	1	11.5	397	1	2.5	251	3	12.0
FOREIGN.										
3 months....	590	475	34	71.6	77	8	103.9	38	11	289.5
6 months....	566	309	16	51.8	202	9	44.6	55	4	72.7
9 months....	547	133	2	15.0	312	7	22.4	102	1	9.8

These statistics show that the manner of feeding is one of the most important considerations in the life and health of a baby. But a comparison of the number of deaths among babies whose fathers earn specified sums (Table 31) shows that the influence of poverty reaches even the breast-fed baby. When the fathers' earnings are small a larger proportion of babies die despite breast feeding.

SEX.

The Johnstown investigation comprehended 1,551 births in the year 1911, male births numbering 813 and female 738, the proportion being as 1,101.6 male to 1,000 female births; or, stated inversely, 907.7 female to 1,000 male births. Newsholme¹ says that "male infants always suffer from a higher infant mortality rate than female infants," and in Johnstown we find this true for the group as a whole, the rates being as shown in the next table:

TABLE 24.—DISTRIBUTION OF LIVE BIRTHS AND STILLBIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO SEX OF BABY.

SEX OF BABY.	All births.	Live births.	STILLBIRTHS.		DEATHS IN FIRST YEAR.	
			Total.	Rate per 1,000 births.	Total.	Infant mortality rate.
Total babies.....	1,551	1,463	88	56.7	196	134.0
Male.....	813	761	52	64.0	105	138.0
Female.....	738	702	36	48.8	91	129.6

Among foreign mothers male births were considerably in excess of female births; among native mothers the reverse was true. The more favorable mortality rate for female infants does not prevail among the children of foreign mothers, as can be seen in the next table, which shows an infant mortality rate of 177.5 for girls as compared with one of 166.2 for boys.

¹ Thirty-ninth Annual Report of the Local Government Board. London, 1910.

TABLE 25.—DISTRIBUTION OF ALL BIRTHS, LIVE BIRTHS, AND STILLBIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO SEX OF BABY AND NATIVITY OF MOTHER.

SEX OF BABY AND NATIVITY OF MOTHER.	All births.	Live births.	STILLBIRTHS.		DEATHS DURING FIRST YEAR.	
			Total.	Rate per 1,000 births.	Total.	Infant mortality rate.
BABIES OF NATIVE MOTHERS.						
Total number.....	860	815	45	52.3	85	104.3
Male:						
Number.....	433	406	27	62.4	46	113.3
Per cent.....	50.3	49.8	60.0		54.1	
Female:						
Number.....	427	409	18	42.2	39	95.4
Per cent.....	49.7	50.2	40.0		45.9	
BABIES OF FOREIGN MOTHERS.						
Total number.....	691	648	43	62.2	111	171.3
Male:						
Number.....	380	355	25	65.8	59	166.2
Per cent.....	55.0	54.8	58.1		53.2	
Female:						
Number.....	311	293	18	57.9	52	177.5
Per cent.....	45.0	45.2	41.9		46.8	

MOTHER'S HOUSEHOLD DUTIES, CESSATION AND RESUMPTION OF.

The extent to which the native and foreign mothers in Johnstown relinquished a part of their household duties as the time for their confinement approached is shown below:

TABLE 26.—DISTRIBUTION OF BIRTHS ACCORDING TO TIME OF THE MOTHER'S RELINQUISHMENT OF PART OF HOUSEHOLD DUTIES BEFORE CONFINEMENT, BY NATIVITY OF MOTHER.

TIME OF RELINQUISHMENT OF PART OF HOUSEHOLD DUTIES BEFORE CONFINEMENT.	All births.	To native mothers.	To foreign mothers.
All mothers.....	1,551	860	691
No household duties relinquished to day of confinement.....	1,350	695	655
Part of duties relinquished:			
Less than 7 days before confinement.....	3	1	2
7 to 13 days before confinement.....	7	5	2
2 weeks to 1 month before confinement.....	16	12	4
1 month or more before confinement.....	174	146	28
Had no household duties.....	1	1	

Among the 174 babies of mothers who relinquished part of their household duties a month before confinement, the infant mortality rate was 112.5, as compared with 136.7 for those of other mothers.

TABLE 27.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO TIME OF RELINQUISHMENT OF PART OF HOUSEHOLD DUTIES OF MOTHER BEFORE CONFINEMENT.

TIME OF RELINQUISHMENT OF PART OF HOUSEHOLD DUTIES BEFORE CONFINEMENT.	All births.	Live births.	Deaths during first year.	Infant mortality rate.
All mothers.....	1,551	1,463	196	134.0
No cessation or less than 1 month.....	1,376	1,302	178	136.7
1 month or more.....	174	160	18	112.5
No housework.....	1	1		

To what extent the relinquishment of household duties at a given time directly affected the health of the child can not be definitely shown. A relation may exist, but on the other hand the difference in the mortality rate may be due to the fact that the mothers could afford to give consideration to their condition and escape some of their heaviest tasks as their pregnancy approached its end, and were members of families who were thoughtful of them and relieved them of these tasks or employed extra household assistance at such times.

Another indication of intelligence and of comfortable surroundings is the care given a mother in the early days of her baby's life, particularly if she is a nursing mother. The duration of her rest period before the resumption of part of her household duties is one measure of this. The foreign mothers, with less education, more numerous and arduous tasks, less opportunity for leisure, and smaller incomes, begin to resume their housework sooner than the native mothers with young babies.

TABLE 28.—DISTRIBUTION OF LIVE BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO TIME OF MOTHER RESUMING PART OF HOUSEHOLD DUTIES AFTER CONFINEMENT, BY NATIVITY OF MOTHER.

TIME OF RESUMING PART OF HOUSEHOLD DUTIES AFTER CONFINEMENT.	LIVE BIRTHS TO—			DEATHS DURING FIRST YEAR.	
	All mothers.	Native mothers.	Foreign mothers.	Total.	Infant mortality rate.
Total.....	1,463	815	648	196	134.0
8 days or less.....	467	44	423	79	169.2
9 to 13 days.....	560	446	114	70	125.0
14 days or more.....	427	318	109	41	96.0
Mother died or not reported.....	9	7	2	6	(¹)

¹ Total number of live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

The fact that a mother takes up her housework in the early days of her baby's life does not necessarily increase the danger of its death. In some cases, however, mothers stated that the quantity of their breast milk was noticeably impaired when they got up and resumed their work too soon. Naturally this would affect the baby's nutrition. In other cases a mother's cares and duties may be so absorbing that she can not give the baby full attention. Whatever the exact explanation, attention should be called to the greater frequency of infant deaths when the mother resumed household duties very soon after childbirth.

A statement of the time of the mother's resumption of household duties in full, like that giving the time of resumption in part, shows that the native mothers have the longer period of rest.

TABLE 29.—DISTRIBUTION OF LIVE BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO TIME OF MOTHER RESUMING ALL HOUSEHOLD DUTIES AFTER CONFINEMENT, BY NATIVITY OF MOTHER.

TIME OF RESUMING ALL HOUSEHOLD DUTIES AFTER CONFINEMENT.	LIVE BIRTHS TO—			DEATHS DURING FIRST YEAR.	
	All mothers.	Native mothers.	Foreign mothers.	Total.	Infant mortality rate.
Total.....	1,463	815	648	196	134.0
8 days or less.....	219	13	206	37	168.9
9 to 13 days.....	182	132	50	30	164.8
14 days or more.....	1,053	663	390	123	116.8
Mother died or not reported.....	9	7	2	6	(¹)

¹ Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

The infant mortality rates for all mothers in the group just referred to, according to the time of resuming housework in full after childbirth, show fewer infant deaths proportionately when the mother has had a longer rest; that is, a rest of two weeks or more.

ECONOMIC FACTORS.

EARNINGS OF FATHER.

A grouping of babies according to the income of the father shows the greatest incidence of infant deaths where wages are lowest, and the smallest incidence where they are highest, indicating clearly the relation between low wages and ill health and infant deaths.

For all live babies born in wedlock the infant mortality rate is 130.7. It rises to 255.7 when the father earns less than \$521 a year or less than \$10 a week, and falls to 84 when he earns \$1,200 or more or if his earnings are "ample."¹ The variation in the infant mortality rate from one earnings group to another is not perfectly regular and consistent, but if any two or more consecutive groups are combined an invariable lowering of the infant mortality rate from one such combined group to that next higher results.

¹ "Ample" as used in this report has a somewhat arbitrary meaning. When information concerning the father's earnings was not available and the family showed no evidences of actual poverty, the word "ample" was used. If no information concerning earnings was available when, on the other hand, the family was clearly in a state of abject poverty, then the income was tabulated as "Under \$521."

TABLE 30.—DISTRIBUTION OF LIVE BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO ANNUAL EARNINGS OF FATHER AND NATIVITY OF MOTHER, FOR LEGITIMATE LIVE-BORN BABIES.

ANNUAL EARNINGS OF FATHER ACCORDING TO NATIVITY OF WIFE.	Total live births.	Deaths during first year.	Infant mortality rate.
Total.....	1,431	187	130.7
Under \$625.....	384	82	213.5
Under \$521.....	219	56	255.7
\$521 to \$624.....	165	26	157.6
\$625 to \$899.....	385	47	122.1
\$625 to \$779.....	224	24	107.1
\$780 to \$899.....	161	23	142.9
\$900 or more.....	186	18	96.8
\$900 to \$1,199.....	138	14	101.4
\$1,200 or more.....	48	4	83.3
Ample ¹	476	40	84.0
Husbands with native wives.....	785	76	96.8
Under \$625.....	80	16	200.0
Under \$521.....	32	9	(?)
\$521 to \$624.....	48	7	145.8
\$625 to \$899.....	193	20	103.6
\$625 to \$779.....	86	6	69.8
\$780 to \$899.....	107	14	130.8
\$900 or more.....	129	10	77.5
\$900 to \$1,199.....	92	7	76.1
\$1,200 or more.....	37	3	(?)
Ample ¹	383	30	78.3
Husbands with foreign wives.....	646	111	171.8
Under \$625.....	304	66	217.1
Under \$521.....	187	47	251.3
\$521 to \$624.....	117	19	162.4
\$625 to \$899.....	192	27	140.6
\$625 to \$779.....	138	18	130.4
\$780 to \$899.....	54	9	166.7
\$900 or more.....	57	8	140.6
\$900 to \$1,199.....	46	7	152.2
\$1,200 or more.....	11	1	(?)
Ample ¹	93	10	107.5

¹ See note on page 45.

² Total live births less than 50; base therefore considered too small to use in computing an infant mortality rate.

In considering the babies of native and of foreign mothers separately in the foregoing table, similar variations in mortality rates according to earnings of father are found, although the foreign infant death rate is higher in each group. The foreign are less numerous both actually and relatively in the higher wage groups.

The foreigners of a given wage group almost always live in a poorer neighborhood than the natives earning the same amount. The foreigners go where they find their own countrymen, most of whom are poor, and hence even those who earn a fair wage find themselves,

until they become Americanized, surrounded by poor conditions and an ignorant class of people.

It is of interest to note what per cent of the native and what per cent of the foreign are in the several earnings groups. The next table shows this for all married mothers and not simply for those of live-born babies as in the foregoing table.

TABLE 31.—NUMBER AND PER CENT OF MOTHERS BY NATIVITY, ACCORDING TO THE ANNUAL EARNINGS OF HUSBAND.

ANNUAL EARNING OF HUSBAND.	ALL MOTHERS.		NATIVE MOTHERS.		FOREIGN MOTHERS.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	1,491	100.0	816	100.0	675	100.0
Under \$521.....	233	15.6	36	4.4	197	29.2
\$521 to \$624.....	174	11.7	50	6.1	124	18.4
\$625 to \$779.....	229	15.4	86	10.5	143	21.2
\$780 to \$899.....	166	11.1	108	13.2	58	8.6
\$900 to \$1,199.....	146	9.8	98	12.0	48	7.1
\$1,200 and over.....	50	3.4	39	4.8	11	1.6
Ample ¹	493	33.1	399	48.9	94	13.9

¹ See note on page 45.

The 1,491 married mothers included in the foregoing table bore 1,517 babies in 1911, the excess being due to plural births. The 33 unmarried mothers and their 34 babies (one mother had twins), although included in some of the general tables, are not included in those relative to the earnings of the husband.

GAINFUL WORK OF MOTHER.

In localities where large numbers of women are engaged in industrial work, comparisons are frequently made of the death rates among their babies with those of the babies of mothers not so engaged. In Johnstown, however, industrial occupations are not open to women, and but 3.1 per cent of the mothers visited went outside their homes to earn money. All mothers who gained money by keeping lodgers or in any other way are, for convenience, designated "wage-earning" mothers, even though their earnings were not in the form of a definite wage at stated periods.

Although not industrially engaged, nearly one-fifth of the mothers did resort to some means of supplementing the earnings of their husbands. Usually they kept lodgers. This was done by the foreign mothers principally, exactly one-third of whom had lodgers, as compared with less than 1 per cent of the native women. Usually work done outside the home consisted either of char work or of assisting husbands in their stores. Generally these stores were in the same building with the home.

When a mother of a young baby does not give her full time to her duties within the home but resorts to means of earning money, it

generally indicates poverty. This is true to a greater degree in Johnstown than in places which have many inducements for women to work. In Johnstown, with its excess of males, especially in the foreign population, the woman's services are particularly needed to make the home.

In the group where the husband earns \$10 a week or less—that is, under \$521 a year—many of the women are wage earners. In each group showing better earnings for the husband the number and percentage of wage-earning wives decline. Such a tabulation as the following almost automatically fixes the minimum wage on which a man, wife, and a child or two can live with any degree of comfort in Johnstown at about \$780 a year. When the husband's wage is less than \$780 a year, it is shown that the wives, in considerable number, must be wage earners. As shown in the next table, in nearly half of the families where the husband earns \$10 a week or less (less than \$521 a year), the wife resorted to some means of earning money; when he earned as much as \$900 a year, only 8.9 per cent of the wives worked, and in the small group where the man earns as much as \$1,200 a year, only 1 in 50.

TABLE 32.—NUMBER AND PER CENT OF HUSBANDS WITH WAGE-EARNING WIVES, BY NATIVITY OF WIFE AND ANNUAL EARNINGS OF HUSBAND.

ANNUAL EARNINGS OF HUSBAND.	TOTAL HUSBANDS.			HUSBANDS HAVING NATIVE WIVES.			HUSBANDS HAVING FOREIGN WIVES.		
	Number.	Husbands with wage-earning wives.		Number.	Husbands with wage-earning wives.		Number.	Husbands with wage-earning wives.	
		Number.	Per cent.		Number.	Per cent.		Number.	Per cent.
Total.....	1,491	278	18.6	816	26	3.2	675	252	37.3
Under \$521.....	233	111	47.6	36	9	25.0	197	102	51.8
\$521 to \$624.....	174	57	32.8	50	3	6.0	124	54	43.5
\$625 to \$779.....	229	51	22.3	86	4	4.7	143	47	32.9
\$780 to \$899.....	166	25	15.1	108	6	5.6	58	19	32.8
\$900 to \$1,199.....	146	13	8.9	98	1	1.0	48	12	25.0
\$1,200 and over.....	50	1	2.0	39	.....	.....	11	1	9.1
"Ample" ¹	493	20	4.1	399	3	.8	94	17	18.1

¹ See note on page 45.

It is impossible to judge from statistics alone whether or not the work done by an individual woman, either her own housework or work for money, is so excessive as to affect her during pregnancy or while nursing to the extent of reacting on the health of the baby; but the fact is that the infant mortality rate is higher among the babies of wage-earning mothers than among others, being 188 as compared with a rate of 117.6 among the babies of nonwage-earning mothers. Wage-earning mothers and low-wage fathers

are in practically the same groups, and it is difficult to secure an exact measurement of the comparative weight of the two factors in the production of a high infant mortality rate.

TABLE 33.—DISTRIBUTION OF LIVE BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE FOR BABIES OF WAGE-EARNING AND NONWAGE-EARNING MOTHERS, ACCORDING TO ANNUAL EARNINGS OF FATHER.

ANNUAL EARNINGS OF FATHER.	MOTHER A WAGE EARNER.		MOTHER NOT A WAGE EARNER.		INFANT MORTALITY RATE.	
	Live births.	Number of deaths in first year.	Live births.	Number of deaths in first year.	Mother a wage earner.	Mother not a wage earner.
Total.....	266	50	1,165	137	188.0	117.6
Under \$521.....	105	26	114	30	247.6	263.2
\$521 to \$624.....	53	8	112	18	150.9	160.7
\$625 to \$779.....	48	6	176	18	127.1	102.3
\$780 or over, or "ample" ¹	60	10	763	71	166.7	93.1

¹ See note on page 45.

ILLEGITIMACY.

Of the 1,551 births included in this investigation 34, or 2.2 per cent, occurred out of wedlock. Nine of the 32 illegitimate babies who were born alive died during their first year. It is recognized that these figures are a very small base from which to draw conclusions concerning the effect of illegitimacy on the infant mortality rate. It is of interest, nevertheless, to note that the findings for this small group are similar to those of countries which compute an infant mortality rate for legitimate and illegitimate children separately, that is, a rate for illegitimates more than twice as high as for children born in wedlock.

TABLE 34.—DISTRIBUTION OF BIRTHS AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE, ACCORDING TO LEGITIMACY.

LEGITIMACY.	Total births.	Live births.	DEATHS DURING FIRST YEAR.	
			Number.	Infant mortality rates.
Illegitimate.....	34	32	9	281.3
Legitimate.....	1,517	1,431	187	130.7

Thirty-two, or 3.7 per cent, of the 860 native mothers, as compared with 2, or 0.3 per cent, of the 691 foreign mothers visited, had illegitimate children in 1911.

REPRODUCTIVE HISTORIES.

In addition to the data relating exclusively to babies born in 1911, a statement was secured from each mother as to the number and duration of each of her pregnancies and the result thereof; that is, the number of children she had borne, alive or dead, the number of miscarriages she had had, and the age at death of each live-born child who had died. Although this information was secured for all mothers, tabulations are presented of the data furnished by married mothers only. Comparatively few single mothers reported more than one child, and information from them on this point is not believed to be as reliable as that from married mothers.

The 1,491 married mothers of babies born in 1911 had had an aggregate of 5,554 pregnancies, resulting in 5,617 births, the excess of 63 births over pregnancies being due to plural births. Eight hundred and four of these children died under 1 year of age, making an infant mortality rate of 149.9 for all their babies, as compared with the rate of 134 for those born in 1911. The stillbirths of these women numbered 194, or 4.5 per cent of the total number of births; miscarriages reported numbered 191, but these were not added to the total reportable¹ pregnancies.

Details as to the infant mortality rates for all babies born to native and foreign mothers included in this study, not only in the year 1911 but at any other time, are presented in the next table, which classifies the babies according to the total number of reportable pregnancies that their mothers had had, to and including the pregnancy resulting in the 1911 birth.

TABLE 35.—DISTRIBUTION OF MOTHERS, OF LIVE BIRTHS, AND OF DEATHS DURING FIRST YEAR, AND INFANT MORTALITY RATE FOR BABIES OF NATIVE AND FOREIGN MARRIED MOTHERS, ACCORDING TO THE NUMBER OF REPORTABLE PREGNANCIES.

REPORTABLE PREGNANCIES FOR MARRIED MOTHERS.	Number of married mothers.	NUMBER OF BABIES.		INFANT MORTALITY RATE AMONG BABIES OF—		
		Born alive.	Died in first year.	All mothers.	Native mothers.	Foreign mothers.
Total	1, 491	5, 363	804	149. 9	113. 1	184. 6
1.....	339	322	35	108. 7	75. 9	183. 7
2.....	283	544	59	108. 5	76. 5	156. 7
3.....	214	626	92	147. 0	118. 0	177. 6
4.....	186	723	78	107. 9	99. 4	116. 3
5.....	147	704	103	146. 3	86. 1	191. 5
6.....	94	546	88	161. 2	157. 4	163. 6
7.....	83	555	78	140. 5	100. 0	173. 8
8.....	54	426	95	223. 0	157. 6	272. 7
9.....	33	283	41	144. 9	128. 4	155. 2
10 or more.....	58	634	135	212. 9	164. 5	257. 6

The statistics, based upon the results of all her reportable pregnancies, show a generally higher infant mortality rate where the mother has had many pregnancies, but there is not always an increase from

¹ "Reportable" pregnancies are those terminating either in the birth of a live child or of a dead child when the period of gestation exceeds 28 weeks; that is, when its registration or report is required by law.

one pregnancy to the next. This is more clearly shown when the pregnancies are grouped as in the next table.

TABLE 36.—INFANT MORTALITY RATE FOR ALL CHILDREN BORNE BY MARRIED MOTHERS, ACCORDING TO SPECIFIED NUMBER OF REPORTABLE PREGNANCIES.

REPORTABLE PREGNANCIES FOR MARRIED MOTHERS.	Infant mortality rate.
Total	149.9
1 and 2.....	108.5
3 and 4.....	126.0
5 and 6.....	152.8
7 and 8.....	176.4
9 or more.....	191.9

This tendency is shown in still another form of summary: Combinations of four or less pregnancies are, for convenience, considered as group 1, while the combinations of over four are designated group 2. The differences in rates in the two groups are notable. The infant mortality rate is much lower for the first than for the second group.

TABLE 37.—INFANT MORTALITY RATE FOR ALL CHILDREN BORNE BY MARRIED MOTHERS, ACCORDING TO SPECIFIED NUMBER OF REPORTABLE PREGNANCIES, BY GROUPS.

REPORTABLE PREGNANCIES FOR MARRIED MOTHERS.	Infant mortality rate.	REPORTABLE PREGNANCIES FOR MARRIED MOTHERS.	Infant mortality rate.
GROUP 1.		GROUP 2.	
2 or less.....	108.5	Over 4.....	171.5
3 or less.....	124.7	Over 5.....	178.8
4 or less.....	119.2	Over 6.....	183.9

This influence of the size of the family upon the infant mortality rate is shown in the computations giving the relative infant mortality rate for the different children borne by married mothers. The rate is most favorable for the second-born child, being 131.2. Among first born it is 143.6; for tenth or later born children 252.3.

TABLE 38.—INFANT MORTALITY RATE FOR ALL CHILDREN BORNE BY MARRIED MOTHERS, ACCORDING TO THE ORDER IN WHICH THE CHILD WAS BORN.

ORDER OF BIRTH.	Infant mortality rate.	ORDER OF BIRTH.	Infant mortality rate.
First-born child.....	143.6	Seventh-born child.....	192.1
Second-born child.....	131.2	Eighth-born child.....	165.4
First and second born children....	138.3	Seventh and eighth born children.....	181.5
Third-born child.....	144.2	Ninth-born child.....	128.2
Fourth-born child.....	142.0	Tenth or later born child.....	252.3
Third and fourth born children....	143.2	Ninth and later born children....	201.1
Fifth-born child.....	178.1		
Sixth-born child.....	175.5		
Fifth and sixth born children....	177.0		

The next table gives a further elaboration of the same data; that is, it shows the infant mortality rate where such rates are lowest and highest, respectively, according to the age of the mother at the child's birth and the order in which the child was born. Attention is again directed to the fact that the statistics presented in this section on "Reproductive histories" are based upon the total number of reportable pregnancies; that is, in addition to the pregnancies resulting in births in 1911, all prior pregnancies of the women considered in the investigation have been included.

TABLE 39.—LOWEST AND HIGHEST INFANT MORTALITY RATES, ACCORDING TO AGE OF MOTHER AT BIRTH OF CHILD AND THE ORDER IN WHICH CHILD WAS BORN.

ORDER OF BIRTH.	INFANT MORTALITY RATES, ACCORDING TO MOTHER'S AGE.			
	Lowest mortality.		Highest mortality.	
	Mother's age.	Mortality rate.	Mother's age.	Mortality rate.
All children.....	20-24	140.0	Under 17	367.3
First child.....	25-29	92.1	17-19	190.4
Second child.....	25-29	100.3	17-19	178.6
Third child.....	30-39	106.4	25-29	160.8
Fourth child.....	30-39	122.4	20-24	155.0
Fifth child.....	30-39	105.8	25-29	236.6
Sixth child.....	30-39	164.8	25-29	171.4

The differences in size of family for native and foreign mothers of different ages are indicated in the next table. The total and average number of live-born children, not reportable pregnancies, are given.

TABLE 40.—TOTAL AND AVERAGE NUMBER OF LIVE-BORN CHILDREN BORNE BY MARRIED MOTHERS HAVING EITHER A LIVE BIRTH OR A STILLBIRTH IN 1911, CLASSIFIED BY NATIVITY AND AGE OF MOTHER.

AGE OF MOTHER AT BIRTH OF CHILD IN 1911.	ALL MARRIED MOTHERS.			NATIVE MARRIED MOTHERS.			FOREIGN MARRIED MOTHERS.		
	Total.	Live-born children.		Total.	Live-born children.		Total.	Live-born children.	
		Number.	Average.		Number.	Average.		Number.	Average.
All ages....	1,465	5,363	3.7	801	2,600	3.2	664	2,763	4.2
Under 20 years..	81	96	1.2	62	70	1.1	19	26	1.4
20 to 24 years....	456	908	2.0	258	483	1.9	198	425	2.1
25 to 29 years....	389	1,261	3.2	196	536	2.7	193	725	3.8
30 to 39 years....	459	2,480	5.4	240	1,188	5.0	219	1,292	5.9
40 years and over.	80	618	7.7	45	323	7.2	35	295	8.4

The next table shows all losses of pregnancy sustained by 628 mothers and the rate of loss per 1,000 births for mothers having different numbers of births or reportable pregnancies. For all mothers it was 188.4. "Loss," as here used, means the sum of infant deaths (or deaths in first year) and stillbirths.

TABLE 41.—AGGREGATE NUMBER OF BIRTHS, LOSSES, AND RATE OF LOSS PER 1,000 BIRTHS, ACCORDING TO NUMBER OF BIRTHS PER MOTHER.

NUMBER OF BIRTHS PER MOTHER.	Aggregate number of births.	Aggregate number of losses.	Rate of loss per 1,000 births.
Total.....	5,617	1,058	188.4
1.....	335	53	158.6
2.....	554	87	157.0
3.....	648	113	174.4
4.....	748	109	145.7
5.....	740	133	179.7
6.....	576	119	206.6
7.....	574	104	181.2
8.....	432	102	236.1
9.....	324	65	200.6
10 or more.....	686	173	252.2

The influence of the economic factor on infant mortality among the babies born prior to 1911 can not be determined with exactness, as no inquiry was made concerning earnings of the father when the other children were born. But it is believed that his earnings during the year following the birth of the 1911 baby can be regarded as an index of the economic standing of the family for some time past. In individual cases, of course, revolutionary changes in the family's income may have occurred, but for the great mass of people in the group considered it is not likely that within such a short space of time as that covered by the child-bearing period of the women considered—most of whom had not had numerous pregnancies—marked changes had taken place. If these known earnings are accepted as an index, the following variations are found to occur in the infant mortality rate for all the babies of whom a record was secured:

TABLE 42.—INFANT MORTALITY RATE FOR ALL CHILDREN OF MARRIED MOTHERS INCLUDED IN THIS INVESTIGATION, DISTRIBUTED ACCORDING TO THE FATHER'S EARNINGS.

FATHER'S ANNUAL EARNINGS.	Infant mortality rate.	FATHER'S ANNUAL EARNINGS.	Infant mortality rate.
Under \$521.....	197.3	\$750 to \$899.....	168.4
\$521 to \$624.....	193.1	\$900 to \$1,199.....	142.3
\$625 to \$779.....	163.1	\$1,200 and over.....	102.2

The infant mortality rate for the babies whose fathers earn under \$521 is almost twice as great as for those born into families in the most prosperous group. These figures strengthen the conclusion reached in the study of the babies born in 1911, namely that the economic factor is of far-reaching importance in determining the baby's chance of life.

GENERAL TABLES.

GENERAL TABLES.

TABLE I.—DISTRIBUTION OF BIRTHS ACCORDING TO NATIONALITY OF MOTHER, BY SECTION OF CITY AND WARD.

SECTION OF CITY AND WARD.	Births to all moth-ers. ¹	Births to native mothers.	BIRTHS TO FOREIGN MOTHERS.								
			Total.	Slovaks, Poles, etc.	Croatians, Ser- vians, etc.	Italians.	Germans.	Magyars.	British.	Syrians and Greeks.	Hebrew.
All sections.....	1,551	860	691	394	76	75	53	38	33	12	10
Down town.....	87	69	18			2	3		7	4	2
Ward 1.....	42	36	6				2		3		1
Ward 2.....	20	14	6				1		4	1	
Ward 3.....	11	6	5			2				2	1
Ward 4.....	14	13	1							1	
Kernville.....	106	100	6			1	2		2		1
Ward 5.....	34	33	1			1					
Ward 6.....	72	67	5				2		2		1
Hornerstown—Ward 7.....	118	107	11			5	3		2		1
Roxbury—Ward 8.....	90	83	7	4					3		
Conemaugh Borough.....	142	78	64	18		41	3		1	1	
Ward 9.....	75	48	27	1		24	1			1	
Ward 10.....	67	30	37	17		17	2		1		
Woodvale—Ward 11.....	113	25	88	49	11	6	14	6	1		1
Prospect—Ward 12.....	57	33	24			17	3		4		
Peelerville—Ward 13.....	20	18	2				1				1
Minersville—Ward 14.....	77	18	59	52			3		2		2
Cambria City.....	330	31	299	204	59		5	21	4	4	2
Ward 15.....	105	7	98	65	22		1	6		2	2
Ward 16.....	225	24	201	139	37		4	15	4	2	
Moxham—Ward 17.....	169	133	36	21		1	4	4	4	2	
Morrellville.....	204	135	69	42	6	1	11	5	3	1	
Ward 18.....	89	44	45	30	6		7		2		
Ward 19.....	55	45	10	4		1	2	2	1		
Ward 20.....	60	46	14	8			2	3		1	
Coopersdale—Ward 21.....	38	30	8	4		1	1	2			

¹ Includes both legitimate and illegitimate births.

TABLE II.—DISTRIBUTION OF BIRTHS, LIVE BIRTHS, STILLBIRTHS, AND DEATHS IN FIRST YEAR, ACCORDING TO NATIVITY OF MOTHER, BY SECTION OF CITY AND WARD.

SECTION OF CITY AND WARD.	ALL MOTHERS. ¹				NATIVE MOTHERS. ¹				FOREIGN MOTHERS. ¹			
	All births.	Live births.	Stillbirths.	Deaths in first year.	All births.	Live births.	Stillbirths.	Deaths in first year.	All births.	Live births.	Stillbirths.	Deaths in first year.
All sections.....	1,551	1,463	88	196	800	815	45	85	691	648	43	111
Down town.....	87	80	7	4	69	63	6	4	18	17	1	.....
Ward 1.....	42	40	2	2	36	34	2	2	6	6	.....	.....
Ward 2.....	20	17	3	1	14	12	2	1	6	5	1	.....
Ward 3.....	11	10	1	.....	6	5	1	.....	5	5	.....	.....
Ward 4.....	14	13	1	1	13	12	1	1	1	1	.....	.....
Kernville.....	106	104	2	6	100	98	2	5	6	6	.....	1
Ward 5.....	34	34	.....	3	33	33	.....	2	1	1	.....	1
Ward 6.....	72	70	2	3	67	65	2	3	5	5	.....	.....
Hornerstown—Ward 7.....	118	109	9	17	107	100	7	16	11	9	2	1
Roxbury—Ward 8.....	90	85	5	10	83	79	4	8	7	6	1	2
Conemaugh Borough.....	142	136	6	16	78	75	3	6	64	61	3	10
Ward 9.....	75	72	3	10	48	46	2	3	27	26	1	7
Ward 10.....	67	64	3	6	30	29	1	3	37	35	2	3
Woodvale—Ward 11.....	113	107	6	29	25	24	1	6	88	83	5	23
Prospect—Ward 12.....	57	55	2	11	33	33	.....	8	24	22	2	3
Peelerville—Ward 13.....	20	18	2	1	18	16	2	1	2	2	.....	.....
Minersville—Ward 14.....	77	72	5	9	18	17	1	3	59	55	4	6
Cambria City.....	330	310	20	55	31	29	2	4	299	281	18	51
Ward 15.....	105	98	7	20	7	6	1	1	98	92	6	19
Ward 16.....	225	212	13	35	24	23	1	3	201	189	12	32
Moxham—Ward 17.....	169	157	12	14	133	124	9	10	36	33	3	4
Morrellville.....	204	194	10	16	135	129	6	10	69	65	4	6
Ward 18.....	89	85	4	8	44	43	1	4	45	42	3	4
Ward 19.....	55	52	3	5	45	42	3	3	10	10	.....	2
Ward 20.....	60	57	3	3	46	44	2	3	14	13	1	.....
Coopersdale—Ward 21.....	38	36	2	8	30	28	2	4	8	8	.....	4

¹ Includes both married and unmarried mothers.

TABLE III.—DISTRIBUTION OF BIRTHS TO NATIVE AND FOREIGN MARRIED MOTHERS AND NUMBER AND PER CENT OF BIRTHS IN EACH GROUP TO THOSE GAINFULLY EMPLOYED, BY SECTION OF CITY.

SECTION OF CITY.	BIRTHS TO MARRIED MOTHERS.								
	All.			Native.			Foreign.		
	Total.	Gainfully employed.		Total.	Gainfully employed.		Total.	Gainfully employed.	
		Number.	Per cent. ¹		Number.	Per cent. ¹		Number.	Per cent. ¹
All sections.....	1,517	281	18.5	828	26	3.1	689	255	37.0
Down town.....	86	4	4.7	68	2	2.9	18	2	.....
Kernville.....	104	3	2.9	98	3	3.1	6	.....	.....
Honerstown.....	112	1	.9	101	1	1.0	11	.....	.....
Roxbury.....	85	1	1.2	78	1	1.3	7	.....	.....
Conemaugh Borough.....	143	40	28.0	78	4	5.1	65	36	55.4
Woodvale.....	110	50	45.5	23	2	.....	87	48	55.2
Prospect.....	52	6	11.5	28	2	.....	24	4	.....
Peelerville.....	19	1	.....	17	1	.....	2	.....	.....
Minersville.....	75	23	30.7	17	1	.....	58	22	37.9
Cambria City.....	329	121	36.8	31	1	.....	298	120	40.3
Moxham.....	167	18	10.8	131	2	1.5	36	16	.....
Morrellville.....	197	11	5.6	128	6	4.7	69	5	7.2
Coopersdale.....	38	2	.....	30	.....	.....	8	2	.....

¹ Not shown when base is less than 50.

TABLE IV.—DISTRIBUTION OF BIRTHS TO MARRIED MOTHERS ACCORDING TO ATTENDANT AT BIRTH AND TO NATIVITY OF MOTHER, BY SECTION OF CITY AND WARD.

SECTION OF CITY AND WARD.	ATTENDANT AT BIRTH.											
	All married mothers.				Native married mothers.				Foreign married mothers.			
	All births.	Physician.	Midwife.	Other or none.	All births.	Physician.	Midwife.	Other or none.	All births.	Physician.	Midwife.	Other or none.
All sections.....	1,517	877	605	35	828	743	83	2	689	134	522	33
Down town.....	86	80	6	.....	68	66	2	.....	18	14	4	.....
Ward 1.....	42	41	1	.....	36	36	.....	.....	6	5	1	.....
Ward 2.....	20	19	1	.....	14	14	.....	.....	6	5	1	.....
Ward 3.....	10	8	2	.....	5	5	.....	.....	5	3	2	.....
Ward 4.....	14	12	2	.....	13	11	2	.....	1	1	.....	.....
Kernville.....	104	94	10	.....	98	91	7	.....	6	3	3	.....
Ward 5.....	34	32	2	.....	33	32	1	.....	1	.....	1	.....
Ward 6.....	70	62	8	.....	65	59	6	.....	5	3	2	.....
Hornerstown—Ward 7.....	112	93	18	1	101	89	11	1	11	4	7	.....
Roxbury—Ward 8.....	85	78	7	.....	78	73	5	.....	7	5	2	.....
Conemaugh Borough.....	143	72	70	1	78	66	11	1	65	6	59	.....
Ward 9.....	75	47	28	.....	48	44	4	.....	27	3	24	.....
Ward 10.....	68	25	42	1	30	22	7	1	38	3	35	.....
Woodvale—Ward 11.....	110	32	71	7	23	18	5	.....	87	14	66	7
Prospect—Ward 12.....	52	31	21	.....	28	23	5	.....	24	8	16	.....
Peelerville—Ward 13.....	19	15	4	.....	17	13	4	.....	2	2	.....	.....
Minersville—Ward 14.....	75	24	47	4	17	13	4	.....	58	11	43	4
Cambria City.....	329	53	255	21	31	26	5	.....	298	27	250	21
Ward 15.....	105	11	88	6	7	4	3	.....	98	7	85	6
Ward 16.....	224	42	167	15	24	22	2	.....	200	20	165	15
Moxham—Ward 17.....	167	140	26	1	131	123	8	.....	36	17	18	1
Morrellville.....	197	133	64	.....	128	113	15	.....	69	20	49	.....
Ward 18.....	87	46	41	.....	42	36	6	.....	45	10	35	.....
Ward 19.....	55	48	7	.....	45	42	3	.....	10	6	4	.....
Ward 20.....	55	39	16	.....	41	35	6	.....	14	4	10	.....
Coopersdale—Ward 21.....	38	32	6	.....	30	29	1	.....	8	3	5	.....

TABLE VI.—DISTRIBUTION OF BIRTHS, LIVE BIRTHS, STILLBIRTHS, AND OF DEATHS DURING FIRST YEAR, ACCORDING TO NATIONALITY (DETAILED) OF MOTHER.

NATIONALITY OF MOTHER.	All births.	Live births.	Still-births.	Deaths during first year.
All mothers.....	1,551	1,463	88	196
Native mothers.....	860	815	45	85
Foreign mothers.....	691	648	43	111
Slovak, Polish, etc.....	394	367	27	65
Slovak.....	276	258	18	48
Polish.....	108	100	8	14
Bohemian.....	2	2	.....	.....
Ruthenian or Russniak.....	7	6	1	3
Danish.....	1	1	.....	.....
Croatian, Servian, etc.....	76	72	4	19
Croatian.....	34	32	2	8
Servian.....	39	37	2	10
Krainer.....	3	3	.....	1
Italian.....	75	71	4	13
German.....	53	47	6	6
Magyar.....	38	38	.....	4
British.....	33	31	2	4
English.....	12	12	.....	2
Irish.....	13	13	.....	2
Scotch.....	4	3	1	.....
Welsh.....	4	3	1	.....
Syrian and Greek.....	12	12	.....	.....
Syrian.....	10	10	.....	.....
Greek.....	2	2	.....	.....
Hebrew.....	10	10	.....	.....

TABLE VII.—DISTRIBUTION OF BIRTHS, LIVE BIRTHS, STILLBIRTHS, AND OF DEATHS DURING FIRST YEAR, ACCORDING TO ATTENDANT AT BABY'S BIRTH AND NATIONALITY OF MOTHER.

ATTENDANT AT BABY'S BIRTH AND NATIONALITY OF MOTHER.	All births.	Live births.	Stillbirths.	Deaths in first year.
All mothers.....	1,551	1,463	88	196
Physician.....	928	866	62	87
Midwife.....	588	562	26	101
Other.....	14	14	.....	5
None.....	21	21	.....	3
Native mothers.....	860	815	45	85
Physician.....	774	730	44	68
Midwife.....	84	83	1	15
Other.....	2	2	.....	2
Foreign mothers.....	691	648	43	111
Physician.....	154	136	18	19
Midwife.....	504	479	25	86
Other.....	12	12	.....	3
None.....	21	21	.....	3
Slovak, Polish, etc.....	394	367	27	65
Physician.....	45	36	9	10
Midwife.....	340	322	18	54
Other.....	2	2	.....	1
None.....	7	7	.....	.....
Croatian, Servian, etc.....	76	72	4	19
Physician.....	31	28	3	2
Midwife.....	22	21	1	12
Other.....	9	9	.....	2
None.....	14	14	.....	3
Italian.....	75	71	4	13
Physician.....	4	4	.....	1
Midwife.....	71	67	4	12
German.....	53	47	6	6
Physician.....	27	23	4	3
Midwife.....	26	24	2	3
Magyar.....	38	38	.....	4
Physician.....	7	7	.....	1
Midwife.....	31	31	.....	3
British.....	33	31	2	4
Physician.....	29	27	2	2
Midwife.....	3	3	.....	2
Other.....	1	1	.....	.....
Syrian and Greek.....	12	12	.....	.....
Physician.....	3	3	.....	.....
Midwife.....	9	9	.....	.....
Hebrew.....	10	10	.....	.....
Physician.....	8	8	.....	.....
Midwife.....	2	2	.....	.....

TABLE VIII.—DISTRIBUTION OF DEATHS OF INFANTS AT SPECIFIED AGE, ACCORDING TO CAUSE OF DEATH OF INFANT AND NATIVITY OF MOTHER.

CAUSE OF DEATH OF INFANT AND NATIVITY OF MOTHER.	Total deaths under 1 year of age.	AGE AT DEATH.													
		Less than 1				1 week but less than 1 month.				1 month but less than 1 year.					
		Total.	1 day or less.	2 days.	3 to 6 days.	Total.	1 week but less than 2.	2 weeks but less than 3.	3 weeks but less than 1 month.	Total.	1 month but less than 2.	2 months but less than 3.	3 months but less than 6.	6 months but less than 9.	9 months and over.
All causes.....	196	45	30	4	11	29	14	7	8	122	18	16	42	31	15
Native mothers.....	85	25	18	3	4	9	2	1	6	51	9	7	18	12	5
Foreign mothers.....	111	20	12	1	7	20	12	6	2	71	9	9	24	19	10
Diarrhea and enteritis.....	52	1	.....	.....	1	5	.....	3	2	46	5	4	17	15	5
Native mothers.....	17	1	.....	.....	1	.....	.....	.....	.....	16	3	1	5	5	2
Foreign mothers.....	35	.....	.....	.....	.....	5	.....	3	2	30	2	3	12	10	3
Respiratory diseases.....	50	.....	.....	.....	.....	3	3	.....	.....	47	7	4	15	13	8
Native mothers.....	19	.....	.....	.....	.....	.....	.....	.....	.....	19	2	2	8	5	2
Foreign mothers.....	31	.....	.....	.....	.....	3	3	.....	.....	28	5	2	7	8	6
Premature births.....	24	21	19	.....	2	3	3	.....	.....	.....	.....	.....	.....	.....	.....
Native mothers.....	11	11	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Foreign mothers.....	13	10	8	.....	2	3	3	.....	.....	.....	.....	.....	.....	.....	.....
Congenital debility or mal- formation.....	19	10	7	1	2	6	2	3	1	3	1	2	.....	.....	.....
Native mothers.....	5	4	3	.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....
Foreign mothers.....	14	6	4	1	1	5	2	3	.....	3	1	2	.....	.....	.....
Injuries at birth.....	7	7	3	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Native mothers.....	6	6	3	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Foreign mothers.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other or not reported.....	44	6	1	1	4	12	6	1	5	26	5	6	10	3	2
Native mothers.....	27	3	1	1	1	8	2	1	5	16	4	4	5	2	1
Foreign mothers.....	17	3	.....	.....	3	4	4	.....	.....	10	1	2	5	1	1

TABLE IX.—DISTRIBUTION OF BABIES ALIVE AT BEGINNING OF EACH MONTH FROM FIRST TO NINTH, ACCORDING TO TYPE OF FEEDING DURING EACH MONTH; NUMBER CONTINUING SUCH DIET UNTIL FOLLOWING MONTH; NUMBER CHANGING TO OTHER SPECIFIED TYPE OF FEEDING; NUMBER OF DEATHS IN EACH GROUP IN FIRST YEAR AND ALSO DEATHS AT BEGINNING OF NEXT MONTH.

TYPE OF FEEDING.	ALIVE AT BEGINNING OF SPECIFIED MONTH.			ON SAME DIET AT BEGINNING OF NEXT MONTH.			CHANGED TO MIXED DIET AT BEGINNING OF NEXT MONTH.			CHANGED TO ARTIFICIAL DIET AT BEGINNING OF NEXT MONTH.			CHANGED TO BREAST EXCLUSIVELY AT BEGINNING OF NEXT MONTH.			Dead at beginning of next month.
	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	
	First month.....	1,463	1,267	196	1,267	1,164	103	43	39	4	78	63	15	1	1		74
Breast exclusively.....	1,333	1,193	140	1,193	1,095	85	43	39	4	72	59	13			38	
Mixed.....	43	36	7	34	32	2				5	4	1			3	
Artificial exclusively.....	55	38	17	53	37	16				1	1	1	1	1	1	
No feeding, infant died at once.....	32		32												32	
Second month.....	1,389	1,267	122	1,306	1,213	93	24	21	3	40	32	8	1	1	18	
Breast exclusively.....	1,181	1,096	85	1,111	1,051	60	23	20	3	32	25	7			15	
Mixed.....	77	71	6	74	68	6	1	1		2	2				3	
Artificial exclusively.....	131	100	31	121	94	27				6	5	1	1	1		
Third month.....	1,371	1,267	104	1,228	1,145	83	83	81	2	43	40	3	1	1	16	
Breast exclusively.....	1,112	1,052	60	986	940	46	80	78	2	37	34	3			9	
Mixed.....	98	89	9	92	84	8	3	3		2	2		1	1	6	
Artificial exclusively.....	161	126	35	150	121	29				4	4		1	1	1	
Fourth month.....	1,355	1,267	88	1,211	1,148	63	87	84	3	36	32	4	3	3	18	
Breast exclusively.....	987	941	46	868	835	33	85	82	3	27	24	3			7	
Mixed.....	175	165	10	166	159	7	2	2		1	1		3	3	3	
Artificial exclusively.....	193	161	32	177	154	23				8	7	1			8	
Fifth month.....	1,337	1,267	70	1,203	1,159	44	83	80	3	32	28	4			19	
Breast exclusively.....	871	838	33	780	760	20	68	65	3	15	13	2			8	
Mixed.....	253	243	10	227	220	7	15	15		8	8				3	
Artificial exclusively.....	213	186	27	196	179	17				9	7	2			8	

TABLE IX.—DISTRIBUTION OF BABIES ALIVE AT BEGINNING OF EACH MONTH FROM FIRST TO NINTH, ACCORDING TO TYPE OF FEEDING DURING EACH MONTH; NUMBER CONTINUING SUCH DIET UNTIL FOLLOWING MONTH; NUMBER CHANGING TO OTHER SPECIFIED TYPE OF FEEDING; NUMBER OF DEATHS IN EACH GROUP IN FIRST YEAR AND ALSO DEATHS AT BEGINNING OF NEXT MONTH—Continued.

TYPE OF FEEDING.	ALIVE AT BEGINNING OF SPECIFIED MONTH.			ON SAME DIET AT BEGINNING OF NEXT MONTH.			CHANGED TO MIXED DIET AT BEGINNING OF NEXT MONTH.			CHANGED TO ARTIFICIAL DIET AT BEGINNING OF NEXT MONTH.			CHANGED TO BREAST EXCLUSIVELY AT BEGINNING OF NEXT MONTH.			Dead at beginning of next month.
	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	Total.	Lived first year.	Died in first year.	
Sixth month.....	1,318	1,267	51	1,108	1,064	44	160	158	2	45	45	.....	.....	.....	5
Breast exclusively.....	780	760	20	616	598	18	148	147	1	15	15	.....	.....	.....	1
Mixed.....	310	300	10	287	279	8	12	11	1	10	10	.....	.....	.....	1
Artificial exclusively.....	228	207	21	205	187	18	.....	.....	.....	20	20	.....	.....	.....	3
Seventh month.....	1,313	1,267	46	1,166	1,130	36	112	110	2	27	27	.....	.....	.....	8
Breast exclusively.....	616	598	18	502	489	13	98	96	2	13	13	.....	.....	.....	3
Mixed.....	447	437	10	429	420	9	14	14	.....	3	3	.....	.....	.....	1
Artificial exclusively.....	250	232	18	235	221	14	.....	.....	.....	11	11	.....	.....	.....	4
Eighth month.....	1,305	1,267	38	1,141	1,119	22	95	94	1	55	54	.....	.....	.....	14
Breast exclusively.....	502	489	13	395	388	7	91	90	1	11	11	.....	.....	.....	5
Mixed.....	541	530	11	516	507	9	4	4	.....	19	19	.....	.....	.....	2
Artificial exclusively.....	262	248	14	230	224	6	.....	.....	.....	25	24	.....	.....	.....	7
Ninth month.....	1,291	1,267	24	1,003	989	14	158	158	.....	121	120	.....	.....	.....	9
Breast exclusively.....	395	388	7	220	217	3	140	140	.....	32	31	.....	.....	.....	3
Mixed.....	611	601	10	551	543	8	18	18	.....	40	40	.....	.....	.....	2
Artificial exclusively.....	285	278	7	232	229	3	.....	.....	.....	49	49	.....	.....	.....	4

TABLE X.—DISTRIBUTION OF BIRTHS TO MARRIED WAGE-EARNING MOTHERS, ACCORDING TO HUSBAND'S ANNUAL EARNINGS AND NATIVITY AND EARNINGS OF MOTHER.

NATIVITY AND ANNUAL EARNINGS OF MARRIED MOTHER.	Total births.	BIRTHS TO MARRIED WAGE-EARNING MOTHER WITH HUSBAND EARNING ANNUALLY—						Ample. ¹
		Under \$521.	\$521 to \$624.	\$625 to \$779.	\$780 to \$899.	\$900 to \$1,199.	\$1,200 and over.	
All wage-earning mothers..	281	112	57	51	25	14	1	21
Under \$53.....	20	6	5	1	4	1		3
\$53 to \$103.....	57	23	12	11	7	3		1
\$104 to \$207.....	89	46	16	19	3	3		2
\$208 to \$311.....	60	23	16	12	4	3	1	1
\$312 and over.....	46	14	8	8	7	2		7
Not reported.....	9					2		7
Native wage-earning mothers...	26	9	3	4	6	1		3
Under \$53.....	6	2	1		2	1		
\$53 to \$103.....	5	2	1	2				
\$104 to \$207.....	5	1	1	2	1			
\$208 to \$311.....	4	3			1			
\$312 and over.....	3	1			2			
Not reported.....	3							3
Foreign wage-earning mothers..	255	103	54	47	19	13	1	18
Under \$53.....	14	4	4	1	2			3
\$53 to \$103.....	52	21	11	9	7	3		1
\$104 to \$207.....	81	35	15	17	2	3		2
\$208 to \$311.....	56	20	16	12	3	3	1	1
\$312 and over.....	43	13	8	8	5	2		7
Not reported.....	6					2		4

¹ See note on page 45.

TABLE XI.—DISTRIBUTION OF RESULTS OF REPORTABLE PREGNANCIES (LIVE BIRTHS AND STILLBIRTHS) AND MISCARRIAGES, ACCORDING TO NUMBER PER MOTHER AND NATIVITY OF MOTHER.

NUMBER OF REPORTABLE PREGNANCIES PER MOTHER AND NATIVITY OF MOTHER.	REPORTABLE PREGNANCIES AND RESULTS THEREOF.										MISCARRIAGES IN ADDITION TO REPORTABLE PREGNANCIES.				
	Total pregnancies.	Total births.	Excess plural births.	Number of mothers.	Live births.			Stillbirths.			Number of miscarriages reported.	Number of mothers reporting miscarriages.			
					Number of mothers having live births.	Number of mothers having babies die.	Infant mortality rate.	Number of stillbirths.	Number of mothers having stillbirths.	Per cent of all births.					
													Number.	Number of mothers having live births.	Infant mortality rate.
All married mothers.	5,554	5,617	63	1,491	5,363	1,465	804	509	149.9	254	194	4.5	191	130	8.7
1.....	339	343	4	339	322	318	35	31	108.7	21	21	6.1	8	8	2.4
2.....	506	576	10	283	544	279	59	54	108.5	32	28	5.6	23	16	5.7
3.....	642	650	8	214	626	214	92	75	147.0	24	23	3.7	26	26	8.4
4.....	744	752	8	186	723	186	78	64	107.9	29	21	3.9	22	18	9.7
5.....	735	740	5	147	704	147	103	67	146.3	36	31	4.9	20	14	9.5
6.....	504	508	4	94	546	93	88	60	161.2	22	13	3.9	23	14	14.9
7.....	581	586	5	83	555	83	78	48	140.5	11	22	5.3	27	15	18.1
8.....	432	437	5	54	426	54	42	42	223.0	11	7	2.5	15	9	16.7
9.....	297	289	2	33	283	33	41	20	144.9	16	11	5.4	13	8	(1)
10 or more.....	654	666	12	58	634	58	135	45	212.9	32	17	4.8	14	10	17.2
Native.....	2,717	2,744	27	816	2,600	801	234	206	113.1	144	115	5.2	136	92	11.3
1.....	234	236	2	234	224	222	17	17	75.9	17	12	5.1	7	7	3.0
2.....	346	351	5	173	327	170	25	23	76.5	24	21	6.8	18	13	7.5
3.....	333	338	5	111	322	111	38	31	118.6	16	16	4.7	21	15	13.5
4.....	376	377	1	94	362	94	36	31	99.4	15	13	4.0	13	10	10.6
5.....	325	326	1	65	302	65	26	21	86.1	24	19	7.4	13	10	15.4
6.....	222	222	.....	37	216	37	34	22	157.4	6	5	2.7	17	9	(1)
7.....	388	392	.....	38	350	38	22	18	100.0	17	11	5.5	25	13	(1)
8.....	184	187	3	23	184	23	20	17	157.6	3	2	1.6	8	5	(1)
9.....	117	118	1	13	109	13	14	7	128.4	9	6	7.6	4	3	(1)
10 or more.....	314	322	8	28	304	28	50	19	163.5	18	10	5.6	10	7	(1)

Foreign	2,837	2,873	36	675	2,763	664	510	303	184.6	110	79	3.8	55	38	5.6
1.....	105	107	2	105	98	96	18	17	183.7	9	9	8.4	1	1	1.0
2.....	220	225	5	110	217	109	34	31	156.7	8	7	3.6	5	3	2.7
3.....	309	312	3	103	304	103	54	44	177.6	8	7	2.6	5	3	2.9
4.....	368	375	7	92	331	92	42	33	116.3	14	8	3.7	9	3	3.7
5.....	410	414	4	82	402	82	77	48	191.5	12	12	2.9	7	4	4.9
6.....	342	346	4	57	330	56	54	38	183.6	16	18	4.6	6	5	3.8
7.....	315	319	4	45	305	45	53	30	173.8	14	11	4.4	2	2	(1)
8.....	248	250	2	31	242	31	60	25	272.7	7	5	3.2	7	4	(1)
9.....	180	181	1	20	174	20	27	13	155.2	7	5	3.9	9	5	(1)
10 or more.....	340	344	4	30	330	30	85	26	257.6	14	7	4.1	4	3	(1)

1 Not shown when base is less than 50.

	744	752	8	186	723	186	78	64	107.9	29	21	3.9	22	18	9.7
4 reportable pregnancies.....															
20 to 24 years.....	156	160	4	39	148	39	28	21	189.2	12	6	7.5	3	3	(²)
25 to 29 years.....	300	301	1	75	290	75	26	23	89.7	11	10	3.7	6	6	8.0
30 to 39 years.....	252	255	3	63	249	63	21	17	84.3	6	5	2.4	6	6	9.5
40 years and over.....	36	36	.....	9	36	9	3	3	(²)	.....	.....	.....	3	3	(²)
Average age: 29 years.															
5 reportable pregnancies.....															
20 to 24 years.....	735	740	5	147	704	147	103	67	146.3	36	31	4.9	20	14	9.5
25 to 29 years.....	50	50	.....	10	49	10	9	7	183.7	1	1	2.0	.....	.....	.....
30 to 29 years.....	280	283	3	56	266	56	51	31	191.7	17	15	6.0	6	4	7.1
30 to 39 years.....	375	377	2	75	361	75	40	27	110.8	16	14	4.2	12	8	10.7
40 years and over.....	30	30	.....	6	28	6	3	2	(²)	2	1	(²)	2	2	(²)
Average age: 30 years.															
6 reportable pregnancies.....															
20 to 24 years.....	564	568	4	94	546	93	88	60	161.2	22	13	3.9	23	14	14.9
25 to 29 years.....	6	6	.....	1	6	1	3	1	(²)	.....	.....	.....	.....	.....	.....
30 to 29 years.....	132	133	2	22	127	21	23	17	181.1	6	1	4.5	6	3	(²)
30 to 39 years.....	360	362	1	60	347	60	54	36	155.6	15	11	4.1	13	9	15.0
40 years and over.....	66	67	1	11	66	11	8	6	121.2	1	1	1.5	4	2	(²)
Average age: 33 years.															
7 reportable pregnancies.....															
25 to 29 years.....	581	586	5	83	555	83	78	48	140.5	31	22	5.3	27	15	18.1
30 to 39 years.....	98	99	1	14	90	14	23	13	255.6	9	5	10.0	2	1	(²)
40 years and over.....	382	385	3	56	377	56	45	28	119.4	18	15	4.6	19	11	19.6
Average age: 34 years.															
8 reportable pregnancies.....															
25 to 29 years.....	432	437	5	54	426	54	95	42	223.0	11	7	2.5	15	9	16.7
30 to 39 years.....	16	16	.....	2	16	2	8	2	(²)	.....	.....	.....	.....	.....	.....
40 years and over.....	408	413	5	51	403	51	87	40	215.9	10	6	2.4	15	9	17.6
Average age: 35 years.												(²)	.....	.....	.....
9 reportable pregnancies.....															
30 to 39 years.....	297	299	2	33	283	33	41	20	144.9	16	11	5.4	13	8	24.2
40 years and over.....	207	208	1	23	195	23	32	15	164.1	13	8	6.3	5	4	(²)
Average age: 37 years.												3.3	8	4	(²)
10 or more reportable pregnancies.....															
30 to 39 years.....	654	666	12	58	634	58	135	45	212.9	32	17	4.8	14	10	17.2
40 years and over.....	360	364	4	33	342	33	85	26	248.5	22	11	6.0	7	6	(²)
Average age: 39 years.												3.3	7	4	(²)

¹ Excess of births over pregnancies due to plural births.

² Rate not computed because of small base.

³ Includes 21 having 10 pregnancies; 16 having 11; 11 having 12; 6 having 13; 3 having 14; 1 having 16.

TABLE XIII.—DISTRIBUTION OF RESULTS OF REPORTABLE PREGNANCIES (LIVE BIRTHS AND STILLBIRTHS) AND MISCARRIAGES, ACCORDING TO NUMBER PER MOTHER AND HUSBAND'S EARNINGS.

SPECIFIED NUMBER OF PREGNANCIES FOR ALL MARRIED MOTHERS AND ANNUAL EARNINGS OF HUSBAND.	REPORTABLE PREGNANCIES.				LIVE BIRTHS.			BABIES DYING IN FIRST YEAR.			STILLBIRTHS.			MISCARRIAGES.	
	Total.	Resulting births.		Number of mothers.	Number of mothers.	Infant mortality rate. ¹	Number of mothers.	Number of mothers.	Number of mothers.	Per cent ¹ of all births. ¹	Number reported.	Mothers reporting.			
		Number.	Excess over pregnancies.									Number.	Per cent of all mothers.		
All reportable pregnancies..	5,554	5,617	63	1,491	5,363	804	149.9	509	254	194	4.5	191	130	8.7	
Husband earns:															
Under \$521.....	938	946	8	233	902	178	197.3	110	44	31	4.7	27	17	7.31	
\$521 to \$624.....	691	700	9	174	608	129	193.1	75	32	25	4.6	22	14	8.0	
\$625 to \$779.....	816	826	10	229	797	130	163.1	88	29	21	3.5	21	15	6.6	
\$780 to \$899.....	611	616	5	166	588	99	168.4	61	28	23	4.5	30	19	11.4	
\$900 to \$1,199.....	574	581	7	146	548	78	142.3	48	33	24	5.7	25	18	12.3	
\$1,200 and over.....	196	199	3	50	186	49	161.3	18	13	9	6.5	8	6	12.0	
Ample ²	1,728	1,749	21	493	1,674	160	95.6	109	75	61	4.3	58	41	8.3	
1 reportable pregnancy....	339	343	4	339	322	35	108.7	34	21	21	6.1	8	8	2.4	
Husband earns:															
Under \$521.....	48	48	.....	48	43	11	.....	11	5	5	.....	.....	.....	.....
\$521 to \$624.....	23	23	.....	23	22	2	.....	2	1	1	.....	.....	.....	.....
\$625 to \$779.....	46	46	.....	46	46	.....	.....	.....	.....	.....	.....	.....	.....	.....
\$780 to \$899.....	35	35	.....	35	32	3	.....	3	3	3	.....	.....	.....	.....
\$900 to \$1,199.....	38	39	1	38	36	4	.....	4	3	3	.....	.....	.....	.....
\$1,200 and over.....	13	13	.....	13	13	1	.....	1	.....	.....	.....	.....	.....	.....
Ample ²	136	137	1	136	130	129	.....	8	7	7	.....	.....	.....	.....
2 reportable pregnancies..	566	576	10	283	544	59	108.5	54	32	28	5.6	23	16	5.7	
Husband earns:															
Under \$521.....	62	64	2	31	62	11	176.4	11	2	2	3.1	.....	.....	.....
\$521 to \$624.....	72	74	2	36	68	8	177.6	6	6	6	8.1	3	2	.....
\$625 to \$779.....	110	111	1	55	108	17	157.4	16	3	3	2.7	.....	.....	.....
\$780 to \$899.....	56	56	.....	28	53	2	169.8	7	3	3	5.4	.....	.....	.....
\$900 to \$1,199.....	46	46	.....	23	41	2	.....	2	5	5	.....	.....	.....	.....
\$1,200 and over.....	16	16	.....	8	14	1	.....	1	2	2	.....	.....	.....	.....
Ample ²	204	209	5	102	198	11	53.6	11	11	8	3.3	9	6	5.9	

	642	650	8	214	626	214	147.0	75	24	23	3.7	26	18	8.4
3 reportable pregnancies...														
Husband earns:														
Under \$521.....	114	115	1	38	110	38	245.5	23	5	4	4.3	5	3	.....
\$521 to \$624.....	102	104	2	34	101	34	158.4	13	3	3	1.9	1	1	.....
\$625 to \$779.....	84	84	.....	28	82	28	158.5	11	2	2	2.4	3	2	.....
\$780 to \$899.....	87	87	.....	29	83	29	72.3	6	4	4	4.6	5	4	.....
\$900 to \$1,199.....	57	58	1	19	55	19	200.0	8	3	3	5.2	7	3	.....
\$1,200 and over.....	6	7	1	2	57	2	.....	1	.....	.....	.....	.....	.....	.....
Ample ²	192	195	3	64	188	64	95.7	13	7	7	3.6	5	5	7.8
4 reportable pregnancies...	744	752	8	186	723	186	107.9	64	29	21	3.9	22	18	9.7
Husband earns:														
Under \$521.....	104	104	.....	26	101	26	128.7	9	3	2	1.9	4	2	.....
\$521 to \$624.....	88	89	1	22	86	22	116.3	9	3	1	3.4	2	2	.....
\$625 to \$779.....	136	137	1	34	129	34	147.3	15	8	6	5.8	3	2	.....
\$780 to \$899.....	96	97	1	24	95	24	136.8	12	2	1	2.1	3	3	.....
\$900 to \$1,199.....	56	58	2	14	55	14	72.7	2	3	1	5.2	2	2	.....
\$1,200 and over.....	40	41	1	10	39	10	.....	4	2	2	.....	2	2	.....
Ample ²	224	226	2	56	218	56	64.2	13	8	8	3.5	6	5	8.9
5 reportable pregnancies...	735	740	5	147	704	147	146.3	67	36	31	4.9	20	14	9.5
Husband earns:														
Under \$521.....	130	131	1	26	125	26	168.0	12	6	6	4.6	3	3	.....
\$521 to \$624.....	90	91	1	18	85	18	235.3	12	6	5	6.6	3	1	.....
\$625 to \$779.....	100	100	.....	20	99	20	181.8	13	1	1	1.0	3	2	.....
\$780 to \$899.....	110	110	.....	22	106	22	122.6	8	4	4	3.6	3	2	.....
\$900 to \$1,199.....	65	66	1	13	60	13	100.0	5	6	4	10.0	2	1	.....
\$1,200 and over.....	30	30	.....	6	26	6	.....	6	4	3	.....	2	2	.....
Ample ²	210	212	2	42	203	42	73.9	11	9	8	4.2	6	5	.....
6 reportable pregnancies...	564	568	4	94	546	93	161.2	60	22	13	3.9	23	14	14.9
Husband earns:														
Under \$521.....	132	132	.....	22	124	21	209.7	14	8	3	6.1	2	2	.....
\$521 to \$624.....	60	60	.....	10	59	10	152.5	8	1	1	1.7	6	2	.....
\$625 to \$779.....	114	115	1	19	110	19	127.3	11	5	2	4.3	3	2	.....
\$780 to \$899.....	48	48	.....	8	48	8	.....	6	.....	.....	.....	4	2	.....
\$900 to \$1,199.....	72	74	2	12	70	12	171.4	9	4	3	5.4	4	3	.....
\$1,200 and over.....	12	12	.....	2	11	2	.....	1	1	1	.....	4	3	.....
Ample ²	126	127	1	21	124	21	137.1	11	3	3	2.4	4	3	.....

² See note on page 45.

¹ Not shown when base is less than 50.

TABLE XIII.—DISTRIBUTION OF REPORTABLE PREGNANCIES (LIVE BIRTHS AND STILLBIRTHS) AND MISCARRIAGES, ACCORDING TO NUMBER PER MOTHER AND HUSBAND'S EARNINGS—Continued.

SPECIFIED NUMBER OF PREGNANCIES FOR ALL MARRIED MOTHERS AND ANNUAL EARNINGS OF HUSBAND.	REPORTABLE PREGNANCIES.				LIVE BIRTHS.			BABIES DYING IN FIRST YEAR.			STILLBIRTHS.			MISCARRIAGES.	
	Total.	Resulting births.		Number of mothers.	Number.	Number of mothers.	Infant mortality rate. ¹	Number of mothers.	Number of mothers.	Per cent of all births. ¹	Number reported.	Mothers reporting.			
		Number.	Excess over pregnancies.									Number.	Per cent of all mothers.		
7 reportable pregnancies..	581	586	5	83	555	83	140.5	48	31	22	27	15	78.1		
Husband earns:															
Under \$521.....	91	92	1	13	88	13	147.7	8	4	4	4	2	.....	
\$521 to \$624.....	56	56	.....	8	51	8	294.1	6	5	4	1	1	.....	
\$625 to \$779.....	98	101	3	14	97	14	164.9	9	4	3	3	4.0	.....	
\$780 to \$899.....	35	35	.....	5	32	5	.....	5	3	2	3	1	.....	
\$900 to \$1,199.....	84	84	.....	12	79	12	88.6	5	5	2	5	3	.....	
\$1,200 and over.....	21	22	1	3	22	3	.....	1	1	.....	2	1	.....	
Ample ²	196	196	.....	8	186	28	107.5	14	10	7	12	7	.....	
8 reportable pregnancies..	432	437	5	54	426	54	223.0	42	11	7	15	9	16.7		
Husband earns:															
Under \$521.....	120	120	.....	15	117	15	265.0	12	3	2	5	2	.....	
\$521 to \$624.....	96	98	2	12	94	12	234.0	10	4	2	1	1	.....	
\$625 to \$779.....	40	41	1	5	41	5	.....	4	3	2	2	1	.....	
\$780 to \$899.....	48	49	1	6	46	6	.....	5	3	2	5	3	.....	
\$900 to \$1,199.....	24	24	.....	3	24	3	.....	3	3	.....	1	1	.....	
\$1,200 and over.....	16	16	.....	2	16	2	.....	2	2	.....	1	1	.....	
Ample ²	88	89	1	11	88	11	125.0	6	1	1	.....	.....	.....
9 reportable pregnancies..	297	299	2	33	283	33	144.9	20	16	11	13	8	.....	
Husband earns:															
Under \$521.....	81	82	1	9	80	9	187.5	6	2	2	3	2	.....	
\$521 to \$624.....	72	72	.....	8	70	8	142.9	6	2	1	3	3	.....	
\$625 to \$779.....	18	18	.....	2	15	2	.....	2	3	1	1	1	.....	
\$780 to \$899.....	18	19	1	2	17	2	.....	2	2	2	.....	.....	.....
\$900 to \$1,199.....	18	18	.....	2	18	2	.....	2	2	.....	.....	.....	.....
\$1,200 and over.....	18	18	.....	2	16	2	.....	2	2	1	.....	.....	.....
Ample ²	72	72	.....	8	67	8	134.3	4	5	4	6	2	.....	

10 or more reportable pregnancies.....	654	666	12	58	634	58	135	212.9	45	32	17	4.8	14	10	17.2
Husband earns:															
Under \$524.....	56	58	2	5	52	5	10	192.3	4	6	1	10.3	1	1	.....
\$524 to \$624.....	32	33	1	3	32	3	17	.....	3	1	1	.....	1	1	.....
\$625 to \$773.....	70	71	1	6	70	6	16	228.6	4	1	1	.....	2	1	.....
\$780 to \$839.....	78	80	2	7	76	7	26	342.1	7	4	2	1.4	3	2	.....
\$900 to \$1,199.....	114	114	.....	10	110	10	24	218.2	8	4	3	5.0	3	2	.....
\$1,200 and over.....	24	24	.....	2	22	2	5	.....	1	2	1	8.3	2	2	.....
Ample ²	280	286	6	25	272	25	37	136.0	18	14	8	4.9	5	3	.....

¹ Not shown when base is less than 50.

² See note on page 45.

TABLE XIV.—DISTRIBUTION ACCORDING TO NUMBER OF PREGNANCIES AND AGE GROUPS OF MARRIED MOTHERS CLASSIFIED BY NATIVITY.

MOTHER'S AGE AND NUMBER OF REPORTABLE PREGNANCIES.	ALL MOTHERS.		NATIVE MOTHERS.		FOREIGN MOTHERS.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total pregnancies.....	1,491	100.0	816	100.0	675	100.0
1.....	339	22.7	234	28.7	105	15.6
2.....	283	19.0	173	21.2	110	16.3
3.....	214	14.4	111	13.6	103	15.3
4.....	186	12.5	94	11.5	92	13.6
5.....	147	9.8	65	8.0	82	12.1
6.....	94	6.3	37	4.5	57	8.4
7.....	83	5.6	38	4.7	45	6.7
8.....	54	3.6	23	2.8	31	4.6
9.....	33	2.2	13	1.6	20	3.0
10 and over.....	58	3.9	28	3.4	30	4.4
Under 20 years, total pregnancies....	89	100.0	66	100.0	23	100.0
1.....	74	83.1	55	83.3	19	82.6
2.....	12	13.5	10	15.2	2	8.7
3.....	3	3.4	1	1.5	2	8.7
20 to 24 years, total pregnancies....	461	100.0	261	100.0	200	100.0
1.....	178	38.6	114	43.7	64	32.0
2.....	156	33.8	86	33.0	70	35.0
3.....	77	16.7	42	16.1	35	17.5
4.....	39	8.5	14	5.4	25	12.5
5.....	10	2.2	4	1.5	6	3.0
6.....	1	.2	1	0.4	.....	.....
25 to 29 years, total pregnancies....	395	100.0	199	100.0	196	100.0
1.....	57	14.5	45	22.6	12	6.1
2.....	74	18.7	46	23.1	28	14.3
3.....	95	24.1	40	20.1	55	28.1
4.....	75	19.0	40	20.1	35	17.9
5.....	56	14.2	17	8.5	39	19.9
6.....	22	5.6	7	3.6	15	7.7
7.....	14	3.5	4	2.0	10	5.1
8.....	2	.4	.....	.....	2	1.0
30 to 39 years, total pregnancies....	466	100.0	245	100.0	221	100.0
1.....	30	6.4	20	8.2	10	4.5
2.....	39	8.4	29	11.8	10	4.5
3.....	36	7.7	25	10.2	11	5.0
4.....	63	13.5	33	13.5	30	13.6
5.....	75	16.1	40	16.3	35	15.8
6.....	60	12.9	24	9.8	36	16.3
7.....	56	12.0	28	11.4	28	12.7
8.....	51	10.9	23	9.4	28	12.7
9.....	23	4.9	8	3.3	15	6.8
10 and over.....	33	7.1	15	6.1	18	8.1
40 years and over, total pregnancies.	80	100.0	45	100.0	35	100.0
2.....	2	2.5	2	4.4	.....	.....
3.....	3	3.8	3	6.7	.....	.....
4.....	9	11.3	7	15.6	2	5.7
5.....	6	7.5	4	8.9	2	5.7
6.....	11	13.8	5	11.1	6	17.1
7.....	13	16.3	6	13.3	7	20.0
8.....	1	1.3	.....	.....	1	2.9
9.....	10	12.5	5	11.1	5	14.3
10 and over.....	25	31.3	13	28.9	12	34.3

TABLE XV.—DISTRIBUTION OF MARRIED MOTHERS BY LOSSES SUSTAINED, ACCORDING TO NATIVITY OF MOTHER AND NUMBER OF POSSIBLE LOSSES.

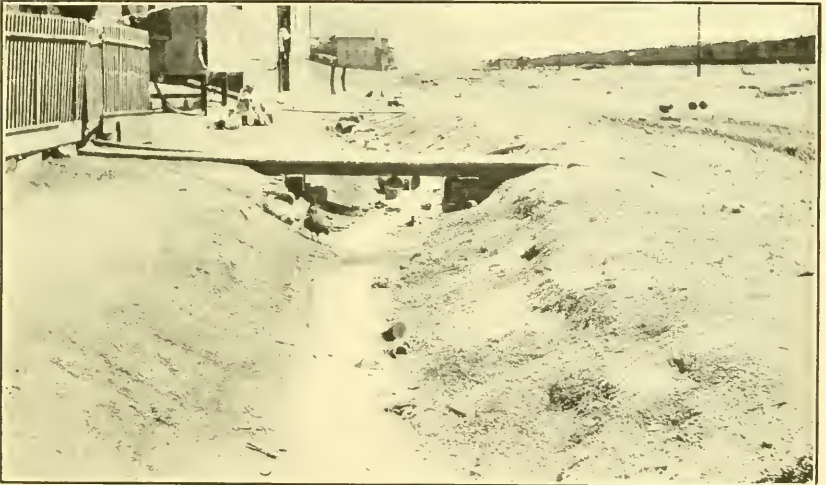
NUMBER OF BIRTHS OR POSSIBLE LOSSES AND NATIVITY OF MOTHER.	Number of mothers.	DISTRIBUTION OF MOTHERS ACCORDING TO NUMBER OF LOSSES.							
		1 loss.	2 losses.	3 losses.	4 losses.	5 losses.	6 losses.	8 losses.	10 or more losses.
All mothers.....	1,491	399	121	60	24	13	8	1	2
1 birth.....	335	53							
2 births.....	277	67	10						
3 births.....	216	73	14	4					
4 births.....	187	55	13	8	1				
5 births.....	148	48	19	11	1	2			
6 births.....	96	44	13	8	2	1	2		
7 births.....	82	22	19	10	2		1		
8 births.....	54	18	8	10	4	2	2		
9 births.....	36	9	10	5	1	1	2		
10 or more births.....	60	10	15	4	13	7	1	1	2
Native mothers.....	816	199	59	19	5	6	1	1	
1 birth.....	232	29							
2 births.....	170	36	5						
3 births.....	111	35	7	1					
4 births.....	98	33	6	3					
5 births.....	65	19	10	4					
6 births.....	38	19	7	1		1			
7 births.....	37	10	8	3			1		
8 births.....	21	8	5	3					
9 births.....	15	4	4	3	1				
10 or more births.....	29	6	7	1	4	5		1	
Foreign mothers.....	675	200	62	41	19	7	7		2
1 birth.....	103	24							
2 births.....	107	31	5						
3 births.....	105	38	7	3					
4 births.....	89	22	7	5	1				
5 births.....	83	29	9	7	1	2			
6 births.....	58	25	6	7	2		2		
7 births.....	45	12	11	7	2				
8 births.....	33	10	3	7	4	2	2		
9 births.....	21	5	6	2		1	2		
10 or more births.....	31	4	8	3	9	2	1		2

APPENDIXES.



OPEN DITCH ALONG WOODVALE AVENUE, WHICH RECEIVES ALL KINDS OF HOUSE DRAINAGE.

This ditch is cleaned out by heavy rains, but within a few days becomes offensive again. This important street in Woodvale is unpaved and without sidewalks.



VIEW OF AN OPEN DITCH ON PLUM STREET, WHICH RECEIVES HOUSE DRAINAGE OF ALL KINDS.

This waste flows along for a distance of about an eighth of a mile before emptying into the sewer. Ducks and geese are frequently seen in the ditch. Children wade here.



ANOTHER VIEW OF PLUM STREET.

Open sewer ditch, a convenient dumping place for empty beer kegs, etc.



SIXTH STREET, OFF MAPLE AVENUE.

One type of tenement. Littered street.



AN OPEN DITCH ALONG NEW STREET, PROSPECT.

Private pipes into this ditch are numerous. Here the waste flows along until it enters a sewer at the right of the fence near the center of the background.



LOWER PART OF BRADLEY ALLEY, WHICH RUNS ALMOST THE ENTIRE LENGTH OF CAMBRIA CITY.

Main or front entrances to abutting houses shown. Unpaved. Width, 19 feet 10 inches.



UPPER END OF BRADLEY ALLEY, CAMBRIA CITY.

(See preceding picture.)



A FRONT YARD ON CONNELLY AVENUE, MINERSVILLE.



A VIEW OF KELLEY ALLEY OR GARVEY PLACE IN MINERSVILLE.

Houses to the left of the picture are of flimsy construction. Drainage from the large house flows into the street.



ONE OF SEVERAL LITTLE ALLEYS OF CONEMAUGH BOROUGH LEADING DOWN THE HILL FROM HUBER STREET.

Waste water from the houses not absorbed by the soil trickles down the depression noted in the center.



HORRICK STREET, CONEMAUGH BOROUGH, NEAR CITY LIMITS; LOOSELY
BOARDED WALK OVER A NATURAL BROOK.

The brook has a considerable fall and carries off with fair rapidity the house sewage it receives.



AN ASH AND RUBBISH HEAP BELOW PEELORVILLE, LOOKING UP FROM THE
PENNSYLVANIA DEPOT.

Company houses shown in the picture.



THE CONEMAUGH RIVER, TAKEN FROM WALNUT STREET BRIDGE NEAR THE PENNSYLVANIA RAILROAD DEPOT.

Because of the low stage of water usual in the warm months, sewage is exposed on the stones and rocks.



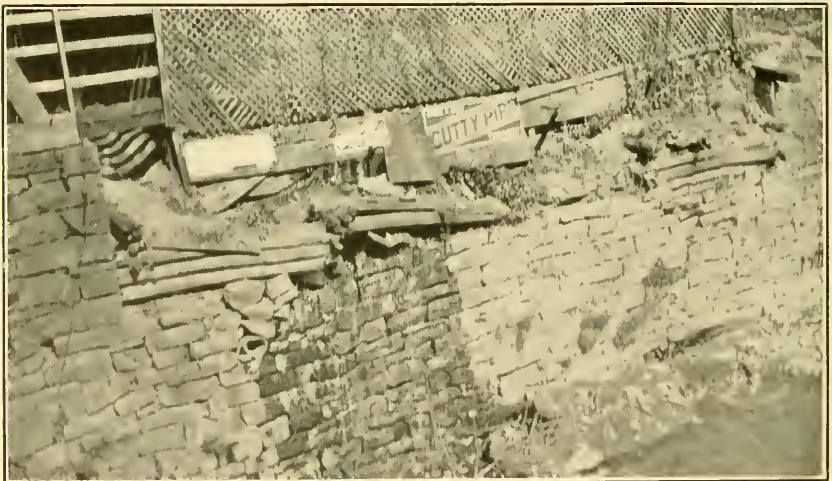
VIEW OF STONY CREEK, LOOKING WEST, TAKEN FROM FRANKLIN STREET BRIDGE.

Discharge of sewage through some of the outlets in the wall trickles down the wall for a distance of perhaps 6 feet before reaching the water. At low stage of the river the deposits on the stones below become very offensive.



THE CONEMAUGH RIVER.

View from foot of bridge at end of Johns Street, just above the point where the Conemaugh and Stony Creek meet. The sewer drainage settles in the ditch alongside the retaining wall for perhaps 150 feet before reaching the sluggish current of the river itself. When the ditch becomes clogged it is dug out, and the contents thrown on the dry bed between the ditch and the river must remain there until washed into the middle of the stream by high water.



A CLOSER VIEW OF THE DISCHARGE FROM A SEWER OUTLET SET IN THE RETAINING WALL ALONG STONY CREEK.

Taken at extreme east end of the Haynes Street footbridge, where odors from the stream are especially offensive. Note that the sewage does not enter the water directly but in a way liable to promote nuisance.



TEN-FAMILY TENEMENT, PLUM STREET, WOODVALE. OUTDOOR TOILETS OPPOSITE FRONT DOORS.



A CLOSER VIEW OF THE SAME PLUM STREET, WOODVALE, TENEMENTS AND TOILETS.

The steep hill toward the back leads to Woodvale Avenue.

APPENDIX I.

STATEMENTS OF MOTHERS.

The statements appended herewith are taken from the testimony of the mothers whose babies were included in the investigation. They, like photographs of random spots, illustrate instances where hard work and a limited income are coexistent with marked loss of infant life. They are offered not as medical or scientific testimony, but because of the natural interest in the mother's viewpoint on these intimate matters. A closer contact with a few individual cases can not but serve to humanize and make more realistic a mass of figures on similar and related topics.

Mother aged 34 years; 9 pregnancies in 17 years; 7 live born; 2 stillborn; no miscarriages reported; 3 deaths in first year, viz, aged 9 weeks, strangled on milk; aged 1 year, pneumonia; aged 6 months, pneumonia; 3 children living at time of agent's visit. In poor health. Has had sunstroke. Worries. Torn at birth of one child. Has lacked medical attention. Father has miner's consumption.

Mother aged 36 years; 10 pregnancies in 12 years; 6 live born; 1 stillborn; 3 miscarriages reported; one death in first year, viz, 4 hours, hemorrhage; 5 children living at time of agent's visit. Formerly toll keeper and had to lift heavy gate during earlier pregnancies. Housework since marriage excessive. Always has instrument deliveries. Home fair. Father skilled mill hand.

Mother aged 38 years; 12 pregnancies in 17 years; 11 live born; 1 miscarriage reported; 3 deaths the first year, viz, 3 weeks, prematurity; 3 months, pneumonia; 3 weeks, unknown; 7 children living at time of agent's visit. During pregnancy resulting in premature birth, in a state of worry and excitement owing to frequent fights in neighborhood. During pregnancy resulting in miscarriage she overexerted self doing heavy laundry work, lifting boilers, etc. Home fair.

Mother aged 35 years; 11 pregnancies in 15 years; 8 live born; 3 miscarriages reported; 3 deaths in first year, viz, aged 10 days, yellow jaundice; 10 days, cause unknown; 6 months, spinal meningitis; 4 children alive at time of agent's visit. Had to do excessive work during pregnancies, as sweeping, washing, lifting tubs, carrying water, etc.

Mother aged 25 years; 7 pregnancies in 6 years; 3 live born; 4 stillborn; 2 deaths the first year, viz, aged 11 days, cause unknown; aged 2 days, cause unknown; 1 child alive at time of agent's visit. Physician stated mother was overworked during pregnancies, therefore during pregnancy resulting in birth of healthy baby in 1911 she was extra careful of self. Fair home. Father skilled mill worker.

Mother aged 34 years; 4 pregnancies in 5 years; all live born; 1 death the first year, viz, aged 11 months, spinal meningitis; 3 children alive at time of agent's visit. Doctor stated period of gestation only $8\frac{1}{2}$ months for each pregnancy. Always miserable during pregnancies. Can not eat. Feet and legs swell. Children fed and cared for intelligently. Home good.

Mother aged 41 years; 12 pregnancies in 22 years; 12 live born; 1 death the first year, viz, aged 3 weeks, spasms; 11 children alive at time of agent's visit. Baby of 1911 poorly developed and in poor health at 1 year of age. When 6 months old was given soup, milk, coffee, and crackers; at 9 months, sauerkraut, cabbage, pie, and everything. Dirty house. Father machinist in mill.

Mother aged 37 years; 12 pregnancies in 15 years; 8 live born; 4 miscarriages reported; 1 death the first year, viz, aged 1 month, cause unknown; 6 children alive

at time of agent's visit. Hard worked and worried during pregnancies. Laundry and char work in addition to home duties, but manages to give babies only breast milk during first year.

Mother aged 31 years; 10 pregnancies in 10 years; 8 live born; 2 stillborn; 4 deaths the first year, viz, aged 7 days, 2 days, 1 day, 12 hours, cause unknown; 4 children alive at time of agent's visit. Doctor says not strong enough to bear babies to term or to have healthy children.

Mother aged 32 years; 7 pregnancies in 11 years; 5 live born; 2 stillborn; one death the first year, viz, aged 2 months, mother says from nervous shock and fright from passing trains. Baby died a day or so after family moved to house along railroad track; 3 children alive at time of agent's visit.

Mother aged 27 years; 6 pregnancies in 10 years; 6 live born; 3 deaths the first year, viz, all aged few weeks, cause unknown; 3 children alive at time of agent's visit. Babies who died all born before marriage, when mother was a servant and had to leave them to be artificially fed and poorly cared for when she went to work.

Mother aged 30 years; 9 pregnancies in 14 years; 6 live born; 3 stillborn; no deaths the first year; 3 children alive at time of agent's visit. During one pregnancy resulting in stillbirth felt strain of struggle she made to separate fighting lodgers; during another resulting in stillbirth she had fall on ice; and during the third her work had been excessive.

Mother aged 41 years; 13 pregnancies in 22 years; 13 live born; 7 deaths the first year, viz, aged 1 year, 1 year, 2 days, 1 month, few minutes, 6 weeks, 8 weeks, causes unknown; 4 children alive at time of agent's visit. No member of family has ever attended school. They own a lot in a miserable unpaved alley, on which they have built houses 3 deep. They have a dirty cow shed there and sell milk in open receptacles. No sewer connection; yard privy; but they have city water. Save father's earnings and live on milk sales. Never has a doctor or midwife at child birth—manages alone. Began to do her housework two days after birth of 1911 baby.

Mother aged 26 years; 6 pregnancies in 5 years; 5 live born; 1 stillborn; 3 deaths in first year, viz, aged 15 minutes, one-half day, 3 days; 1 child alive at time of agent's visit. The 1911 baby alive and in poor health at 1 year of age. Was given table food in addition to breast milk from 4 months of age.

Mother aged 31 years; 6 pregnancies in 9 years; 6 live born; 2 deaths the first year, viz, aged a few months, croup; a few months, bronchitis and pneumonia; two others at 14 months, each of bronchitis and pneumonia; 2 children alive at time of agent's visit. Father has tuberculosis. Poor, insanitary home. Total income, \$500 a year.

Mother aged 33 years; 4 pregnancies in 8 years; 3 live born; 1 miscarriage reported; 1 death the first year, viz, aged 4 months, pneumonia; 2 children alive at time of agent's visit. Does excessive work in own home in addition to char work. The 1911 baby was only one to die in first year. Deserted by husband early in that pregnancy. This pregnancy period was one of worry and mental and physical strain to support her family, and when baby was born she had no milk and gave him condensed milk from birth.

Mother aged 30 years; 11 pregnancies in 12 years; all live born; 5 deaths the first year, of which 2 were from pneumonia; 6 children alive at time of agent's visit. Frail, hard worked, and worried over money matters. Kitchen is living room and a "dark hole in basement." Ventilation of home bad; sleeping-room window always shut "tight." Baby born in 1911 died of pneumonia at age of 9 months.

Mother aged 34 years; 6 pregnancies in 10 years; 6 live born; 5 deaths in first year; causes thereof unknown. The 1911 baby was aged 2 months at death; 1 child alive at time of agent's visit. Says she has never had enough to eat since marriage and that breast milk always leaves her two weeks after childbirth. Poor, dirty, close house. Father a teamster who spends considerable portion of wages in drink.

Mother aged 20 years; 1 pregnancy, resulting in a live-born child who died at the age of 9 months of cholera infantum. Her only child born over one year after husband's desertion; latter claims she is syphilitic. She comes from feeble-minded family whose history is matter of State record. Her grandfather acquitted of killing his son on account of mental condition. Her mother and sister and latter's 18-months-old baby all officially pronounced feeble-minded. Family of loose morals. The baby born in 1911 weaned from breast at age of 4 months and died of cholera infantum at age of 9 months.

Mother aged 30 years; 9 pregnancies in 11 years; 8 live births; 1 miscarriage reported; 3 deaths in first year, viz, aged 3 months, pneumonia; aged 8 months, malarial fever and rheumatism; and the baby born in 1911 weaned from breast when 6 weeks of age, died at age of 9½ months of gastroenteritis; 5 children alive at time of agent's visit. During pregnancy resulting in miscarriage two months after conception, lived on second floor and had to carry heavy wash up and down from yard.

Mother aged 27 years; 3 pregnancies in 3 years, all live births; 2 died in first year, viz, aged 15 days of cause unknown to mother, and other born in 1911, of hereditary syphilis, according to death certificate. Poor, dirty home. Father a steel-mill laborer at \$10 a week. One child alive at time of agent's visit.

Mother aged 35 years; 6 births in 12 years; 4 live births and 2 stillbirths. All live born died in first year, viz, aged 6 weeks, bronchitis; aged 13 days, bronchitis; aged 2 days, weak from birth; aged 4 hours, inanition, the last being the 1911 baby. Had another child the following year and she and her husband were so anxious that at least one child should live that she consulted physician concerning its care. Upon his advice she gave up her 20 boarders immediately after child's birth and devoted all her time to it. Thinks she did not stop her hard work soon enough; says she has always worked too hard, keeping boarders in this country and cutting wood and carrying it and water on her back in the old country. Also says the carrying of water, coal, and cases of beer in this country is great strain on her. Father furious because all babies die; wore red necktie to funeral of last to show his disrespect for wife who can only produce children that die. A type of woman who would follow, and profit by, instruction in prenatal care.

Mother aged 25 years; 3 pregnancies in 3 years; all live births; 2 died in first year, viz, aged 1 day, cause unknown; aged 11 months (born in 1911), pneumonia; 1 child alive at time of agent's visit. Father a steel-mill hand. Damp, badly ventilated home, outside toilet.

Mother aged 27 years; 8 children; 1 before marriage and 7 in the 11-year period since marriage at the age of 16. All live births; 3 deaths under 1 year of age, viz, aged 8 months, unknown cause, "stomach turned black"; 3-months old, same statement as for 8-months old child; aged 11 months, ileocolitis. This last born in 1911, was breast fed only three months and then given condensed milk to supplement breast-milk feeding. Four children alive at time of agent's visit. Boarders. Fairly good home. Father a steel-mill hand.

Mother aged 25 years; 2 pregnancies in 8 years; both live-born children, of whom one died, aged 2 days, cause unknown. Mother says neither doctor nor midwife present at birth; that husband "caught" baby at 3 a. m., and she was up and doing regular work at 6 a. m. One child alive at time of agent's visit. Thirteen boarders. Family sleeps in kitchen, which is also used as dining and living room for boarders. Water supply in yard, and privy in yard used by several families. Father works in coal mine.

Mother aged 34 years; 8 pregnancies in 16 years; all live-born children, all but 2 of whom died in first 2 weeks of life from unknown causes, except the last, whose death was certified as from ileocolitis; 2 children alive at time of agent's visit. Never has doctor or midwife at childbirth. Very ignorant. Father a laborer in steel mill.

Mother aged 28 years; 3 pregnancies in 3 years, resulting in 4 live births; 2 (twins) died in their first year, aged 1 month and 4 months, of inanition and malnutrition, respectively; they were never breast fed; condensed milk from birth; 2 children alive at time of agent's visit. Six boarders. Poor, dirty home. City water in yard, also dry privy. Father a steel-mill hand.

Mother aged 36 years; 12 pregnancies in 17 years; all live births; 3 died first year, viz, aged 9 days, born sickly with big head; 9 months, bowel trouble; 10 months, bowel trouble; 9 children alive at time of agent's visit. Began to feed the 1911 baby, who died last, on raw cows' milk from the age of 2 months because she went out to do laundry work and cleaning in the home of a physician and the baby had to be fed in her absence. Bought milk from neighboring cow shed. Combined housework for her large family and outside work a great strain on mother. Dirty home. Father works in mine.

Mother aged 31 years; 10 births in 14 years, 1 being stillbirth. Every live-born child of this woman died in 1 year or less, as follows: Age 4 months, cough; 3 months, cough; 1 year, unknown; 1 year, unknown (the last two were insured for \$26 each;

one baby died before company delivered policy); the others died at ages of 3 months, 4 months, 1 year, 3 months, and 10 weeks, respectively, of causes unknown to mother, who said all had "sores on body." Certificate gives scrofula as cause of death of baby born in 1911. The first 2 children were born and died in Europe. Attending midwife in Johnstown says father has syphilis. Both parents, however, claim to be healthy; father drinks, came to United States 2 years ahead of wife. Had worked in cigar factory from age of 13 until she came to United States. Her own mother had worked in same place 30 years. She never stays in bed over 3 days when a child is born. Father a car-shop rigger.

Mother aged 25 years; only 1 pregnancy; mother married 2 years. Baby born alive with "sores on body"; died aged 4 months; she says "wasted away"; certificate states ileocolitis. Weaned from breast when 3 weeks old because she had typhoid. Hard worker, but has dirty home and never opens a window. Water and privy in yard. Father a steel-mill hand.

Mother aged 20 years. First and only pregnancy resulted in live-born child who died, aged 6 months, of convulsions. Weaned from breast, aged 4 months, because her milk left her on account of hard work. Baby on condensed milk till 5 months old, then given bread, cakes, apples, etc. Five boarders. Home neither clean nor well ventilated. Father a steel-mill worker.

Mother aged 22 years; only 1 pregnancy; a live-born child that died in July, aged 7 months, of cholera infantum. Milk and crackers added to breast feeding at age of 5 months. Again pregnant when baby was 6 months old, but continued nursing baby until its death, 1 month later. Unclean 1-room home; yard hydrant and privy for use of this and other families. Father works in coal mine.

Mother aged 38; 13 pregnancies in 17 years, 11 live births and 2 premature stillbirths. Only 2 children living at time of agent's visit. The second to eighth, the eleventh, and the thirteenth children died of bowel trouble at ages ranging from 3 weeks to 4 months. Only cause of death she can give is that "food did not agree with them." Believed in feeding babies and gave them everything anybody told her to give them; begins at 1 month to give them bread, potatoes, egg, crackers, etc. For last baby that died she got a goat and gave the baby its milk; goat got sick, but she persisted in giving the baby its milk until the goat went dry. Directed the feeding of her daughter's baby until its death at 3 months of age. On account of many children she has had, the neighbors consider her an authority on baby care. Slovenly home. Dry privy in yard. Father a stable hand.

MOTHERS WHO HAD STILLBORN CHILDREN IN 1911.

Mother aged 23 years; 2 live births and 1 stillbirth in 4 years. Stillbirth followed a fall down cellar steps while carrying coal when 6 months pregnant; 2 children alive at time of agent's visit. Father works in coal mine.

Mother aged 24 years; 3 pregnancies in 5 years, 2 live births and 1 stillbirth, which physician said was due to excessive work on sewing machine during pregnancy. Both live-born children alive at time of agent's visit. Father a steel-mill hand. Good home.

Mother aged 30 years; no live births; 2 miscarriages and 1 stillbirth from August, 1910, to November, 1911; periods of gestation 5, 4, and 6 months, respectively. Cause of losses unknown. When 21 years old had operation for prolapsus. Always tired and weak during pregnancies. Father a steel-mill worker. Home good.

Mother aged 39 years; 9 pregnancies in 19 years; 5 live births; 2 stillbirths; 2 miscarriages reported. Gives overwork and worry as cause of miscarriages and 1 stillbirth and a fall as cause in the other stillbirth; 4 children alive at time of agent's visit. Father laborer in steel mill. Home good.

Mother aged 27 years; 3 pregnancies in 8 years; 2 live births (in 1903 and 1905) and 1 stillbirth (in 1911); 2 children alive at time of agent's visit. In 1908 had fall which caused internal displacements; never had treatment for same; during 1911 pregnancy had convulsions from uremic poisoning. She has kidney trouble. Fair living conditions. Father a mill hand.

Mother aged 30 years; 2 pregnancies in 2 years; no live births. First a miscarriage after 4½ months' gestation, said to be due to fall; second, after 7 months' gestation, attributed to indigestion. Father a machinist in steel mill. Home clean. Dry privy and well are in yard.

Mother aged 37 years; 10 pregnancies in 16 years; first, seventh, eighth, and ninth children were live born; the others stillborn. All the live born died, as follows: Age 3 months, scarlet fever; 2 months, scarlet fever; 6 months, "boils on stomach"; 6 weeks, cause unknown. Has no idea of causes of stillbirths; very ignorant. Keeps boarders. Father a laborer in steel mill.

Mother aged 31 years; 5 pregnancies in 8 years; 4 live born; 1 (the last) premature stillborn from an unknown cause. All the live-born children died under 6 months of age, viz, 6 months old, summer complaint; 2 months, summer complaint; 2 weeks, unknown cause, but was half black and had sores on stomach; 1 day old, cause unknown. Keeps boarders. Home bad. Father a laborer in steel mill.

Mother aged 28 years; 5 pregnancies in 3 years; 4 live births, the last a stillbirth; all live born died of unknown causes at ages of 10 months, 3 weeks, 2 weeks, and 2 weeks, respectively. First baby bottle fed from birth; could not nurse him on account of having "neck full of boils." Has had hospital treatment for womb trouble. Father a steel-mill worker. Insanitary home.

Mother aged 23 years; 4 pregnancies in 3 years; 1 live birth and 3 stillbirths. The live-born baby, who died at age of 3 months of unknown cause, had "scabs on face." She is a charwoman, who thinks that "possibly" she works too hard. While pregnant always has fear babies will be born dead. Does not feel good after big day's work done during pregnancy. Father a steel-mill hand. Poor home conditions.

APPENDIX II.

DETAILED DESCRIPTION OF METHOD USED FOR COMPUTING INFANT MORTALITY RATE FOR THIS REPORT, AND COMPARISON WITH CONVENTIONAL METHOD.

In this study the infant mortality rate is obtained by comparing the number of babies born alive in Johnstown in 1911 with the number of those same babies who died before they were a year old, omitting, as was necessary in a detailed study where approximations were not allowed, those babies whose parents could not be located by the bureau's agents. This method gives an exact and absolute infant mortality rate of 134 per thousand for this limited group of babies.

Obviously, this method can not practically be used to obtain the infant mortality rate for large groups of population, year by year. Where there is a constant flow of population, cities, States, or communities can not trace the place of birth of infants dying within their respective areas or follow each child born within their boundaries if it moves away. It is impossible to know the life history of each child born in the area considered in a given year and to determine, as has been done for this intensive study of a small and definite group, how many babies per 1,000 live born in a given area actually do die under 1 year of age.

The established method of obtaining an infant mortality rate is to compare the live births in a given area during a single calendar year with the infant deaths (that is, deaths of babies under 1 year of age) occurring during that same year. Of course, the babies dying in that year are not all born in the same year nor in that same area, and of those born in the given calendar year not all who die under 12 months of age die in the calendar year of their birth. But this is the only feasible method as yet discovered for approximating an infant mortality rate for large areas, and it is sufficiently accurate for practical and comparative purposes; that is, for approximating the relative rank of different cities, States, and countries with respect to infant mortality.

The infant mortality rates of the various States and also of cities of at least 50,000 population within the registration area¹ of the United States for the year 1910 are shown in the following table, taken from a bulletin of the Federal Census Bureau.² All the rates in this table are computed by the established method.

¹ The Bureau of the Census designates as the registration area the area comprising States in which the registration laws are of suitable character and sufficiently well enforced to insure at least approximately complete (i. e., at least 90 per cent) returns of births and deaths. In addition to such States it includes certain cities in nonregistration States in which the returns are made with equal effectiveness under local ordinances.

² Bulletin 109, Mortality Statistics: 1910. Government Printing Office, Washington, 1912.

POPULATION, REGISTERED BIRTHS, DEATHS OF INFANTS UNDER 1 YEAR OF AGE, AND INFANT MORTALITY RATES FOR REGISTRATION STATES AND REGISTRATION CITIES HAVING A POPULATION OF AT LEAST 50,000 IN 1910.

AREA.	Population in 1910.	Births. ¹	DEATHS ² OF INFANTS UNDER 1 YEAR OF AGE.	
			Number.	Per 1,000 births. ³
REGISTRATION STATES.				
Connecticut.....	1,114,756	27,291	3,476	127
Maine.....	742,371	15,578	2,108	135
Massachusetts.....	3,366,416	86,765	11,377	131
Michigan.....	2,810,173	63,566	7,912	124
New Hampshire.....	430,572	9,385	1,373	146
Pennsylvania.....	7,665,111	202,631	28,377	140
Rhode Island.....	542,610	⁴ 6,595	⁴ 1,111	⁴ 168
Vermont.....	355,956	7,343	751	168
REGISTRATION CITIES OF 50,000 POPULATION OR OVER IN 1910.				
Connecticut:				
Bridgeport.....	102,054	2,576	367	123
Hartford.....	58,915	2,411	286	119
New Haven.....	133,605	3,772	406	108
Waterbury.....	73,141	2,150	320	149
Washington, D. C.....	331,069	7,016	1,068	152
Portland, Me.....	58,571	1,163	167	144
Massachusetts:				
Boston.....	670,585	17,760	2,246	126
Brockton.....	56,878	1,359	134	99
Cambridge.....	104,839	2,462	293	119
Fall River.....	119,295	4,591	854	186
Holyoke.....	57,730	1,702	362	213
Lawrence.....	85,892	3,165	529	167
Lowell.....	106,294	2,630	607	231
Lynn.....	89,336	2,218	216	97
New Bedford.....	96,652	3,873	685	177
Somerville.....	77,236	1,728	174	101
Springfield.....	88,926	2,438	302	124
Worcester.....	145,986	3,918	536	137
Michigan:				
Detroit.....	465,766	11,900	2,138	179
Grand Rapids.....	112,571	2,693	329	122
Saginaw.....	50,510	897	130	145
Manchester, N. H.....	70,063	1,539	375	193
New York, N. Y.....				
Bronx Borough.....	4,766,883	125,316	6,159	125
Brooklyn Borough.....	430,980	10,926	11,047	96
Manhattan Borough.....	1,634,351	43,128	5,063	117
Queens Borough.....	2,331,542	66,112	8,900	135
Richmond Borough.....	284,041	7,095	865	122
Richmond Borough.....	85,969	2,055	284	138
Pennsylvania:				
Allentown.....	51,913	1,406	202	144
Altoona.....	52,127	1,392	166	119
Erie.....	66,525	1,713	197	115
Harrisburg.....	64,186	1,308	169	129
Johnstown.....	55,482	1,628	268	165
Philadelphia.....	1,549,008	38,666	5,334	138
Pittsburgh.....	533,905	15,059	2,259	150
Reading.....	96,071	2,370	336	142
Scranton.....	129,867	3,512	520	148
Wilkes-Barre.....	67,105	1,840	269	146
Rhode Island:				
Pawtucket.....	51,622	(⁵)	191	(⁵)
Providence.....	224,326	(⁵)	827	(⁵)

¹ Provisional figures; exclusive of stillbirths.

² Exclusive of stillbirths.

³ Based on provisional figures for births.

⁴ The figures for Rhode Island are exclusive of Providence and Pawtucket.

⁵ Returns of births not received from State board in time for inclusion.

It will be seen by this table that Johnstown is among the 10 cities of more than 50,000 population which had an infant mortality rate for 1910 in excess of 150 per 1,000 births. These 10 cities and their respective rates are as follows: Lowell, Mass., 231; Holyoke, Mass., 213; Manchester, N. H., 193; Fall River, Mass., 186; Detroit, Mich., 179; New Bedford, Mass., 177; Lawrence, Mass., 167; Johnstown, Pa., 165; Washington, D. C., 152; and Pittsburgh, Pa., 150.

It should be borne in mind that the absolute infant mortality rate of 134, computed for the group of babies included in this investigation, that is, for those born in Johnstown in 1911, can not be compared with any of the approximate rates in the foregoing table, since the basis of computation is entirely different. But the method used in this report seemed to be the only practicable one for our purpose, namely, to measure the infant mortality rate in different districts of the city where the babies are subjected to varying conditions.

APPENDIX III.

THE MILK SUPPLY.

[A study by the Dairy Division, United States Department of Agriculture, May 23 to June 16, 1913. Conducted by L. B. Cook, C. E. Clement, and B. J. Davis.]

Between the dates of May 23 and June 16, 1913, the Dairy Division, United States Department of Agriculture, made a study and survey of the milk supply of Johnstown, Pa. This study consisted of a chemical and bacteriological examination of samples and an inspection of the sources of supply. The Government score card was used for all inspection work. This work showed that about 4,000 gallons of milk were consumed daily in the city, or an average of a little over one-half pint per capita. About two-thirds of this milk is shipped over the Baltimore & Ohio and the Pennsylvania Railroads, but by far the most over the Baltimore & Ohio. The sources of the milk supply may easily be divided into city cow dairies, farmer milk dealers, dairy farms, city milk plants, and stores. Each of these will be discussed separately.

CITY COW DAIRIES.

About 150 cows are kept within the city limits. Most of these dairies are owned by foreigners and consist of two or three cows. The city dairies produced about 150 to 200 gallons of the city's milk supply. These dairies are very filthy and the sanitary conditions bad. The health of the cows is somewhat questionable, because the majority are stabled in small stables throughout the year. These stables are so small and the cows so crowded in that in some stables they have to take turns in lying down. The stables frequently have no means of ventilation or lighting except one or two small openings in the sides of the building. Most of the stables were located near contaminating surroundings, such as manure piles and outside closets.

The food for the cows in many of these dairies was fermented and in a bad condition, due to its being a wet mixture which was prepared far in advance of feeding.

The utensils were very poor in construction, most of them having open seams and in a condition impossible to clean properly. The pails were of the common cheap open type. In nearly all cases city water was used for all purposes.

The cows were not in as bad a condition as they might have been with regard to cleanliness, although very little bedding was used, but the manure as a rule was not left standing in the stable, which accounts partly for the condition of the cows.

The uncleanliness of the stable was marked, and usually no credit was given under this heading. Very few whitewashed stables were found, while cobwebs, dirt, and dust abounded nearly everywhere.

The manure was removed to a box or pile near the stable. Some of these boxes were covered, but many were not.

These city dairies had no milk houses. As soon as the milk was milked it was taken to the house, strained, and delivered to the customers, who were usually the neighbors.

The milk utensils were often found dirty and being used for many other purposes. It is very doubtful if many of these milk pails are ever thoroughly scalded. After being washed they were kept almost any place, but were seldom put in a good place free from contaminating surroundings.

The milking was usually done by the women, who wore very dirty clothes and often milked with wet and filthy hands. No pretense was made to clean the cows or use a damp cloth.

The milk was not cooled, but sold while warm at 8 cents per quart. Most of the consumers who bought this milk had no ice or refrigerators, therefore it remained warm for some time or until consumed. Sometimes the milk was placed in earthen jars and set on the cellar bottom, but as a rule no effort was made at cooling. The milk was sold twice a day.

The average score for the 48 city dairies visited was 26.34 points. The highest was 43.50 and the lowest 16.75—12 scored below 20, 23 between 20 and 30, and 12 in the thirties, with 1 above 40.

FARMER MILK DEALERS.

By farmer milk dealers is meant those farmers who retail their own milk and possibly buy a little from other farms. There are about 26 such dealers in the city and they handle about 1,000 gallons of the city's milk supply. Some of these dairies were the source of the city's best milk. The average score of these dairies was 39.43. Most of this milk is hauled from 3 to 5 miles to the city, then peddled upon the street. These dealers bottle very little milk, and most of it is drawn from a faucet. They use covered wagons and some peddle garden truck—like flowers, onions, etc.—on the same wagon.

The cows, as a rule, seemed to be in good health, but very few had ever been tuberculin tested. The barns were of the sort typical of that section of the country, with a stone wall on one side and an overhanging shed on the other, which meant that the stables were dark, as light could only enter at the ends. The basement was used for all the farm animals, as horses, pigs, cows, chickens, etc., and the cow stable was not separated from the rest. The general construction was only fair. A few cement floors, tight walls, ceilings, etc., were found.

The ventilation was poor and conditions as to the cleanliness of the stable very bad. In many of the stables at this time of the year the manure was not removed daily and oftentimes it was piled near the stable. In general the cows could be well rated as to cleanliness, as they were outdoors both day and night.

At some of these farms milk houses were found, but many used the cellar of the house for handling and cooling the milk. These milk rooms were often used for the storage of other things and were not as clean as they should be. Some strained the milk at the stable, but many removed it to the milk room for straining.

Many of the utensils were of poor construction and were not thoroughly washed. The milk dealers usually scalded the pails and had a place to keep them after being washed. No covered pails or special milking suits were found and only one milk cooler. Most of the milkers milk with a dry hand, but do not clean the cows or use a damp cloth. Most of these farms had excellent water facilities, having running water at a temperature of from 50° to 55° F. This was used for washing utensils and cooling the milk.

The cooling was done by setting the 5-gallon cans in a trough of running water, but oftentimes the milk was not stirred, therefore the cooling was delayed. Some of these dairymen used ice on the farms and on the wagons.

The lowest score of these farmer milk dealers was 22.40 and the highest was 53.50. There were 4 farms scoring in the twenties, 8 in the thirties, 13 in the forties, and 1 above 50.

DAIRY FARMS.

Under this heading is meant the farms that ship or draw milk to the dealers. Some of these farms sold cream in the summer and milk in the winter. Two hundred and twenty-one of such farms were visited and their average score was 36.06, which was a little lower than the farmer dealer. Some of these farms were fairly good, but most of them were poor in their facilities and methods of handling milk. In general, these farms were like the farm dealers, but many were much worse. Very few had any milk houses, but handled the milk in the cellar or set the cans in some trough of running water. These farmers oftentimes had to carry their milk several miles over very bad roads to the railroad station where it was shipped to Johnstown. Very few covered pails or milk coolers were being used.

The lowest score for these farms was 22.50, while the highest was 70.6. Of these farms 52.9 per cent scored between 30 and 40.

Transportation.—Most of this milk was shipped over the Baltimore & Ohio Railroad from points between Somerset, Pa., and Johnstown. The milk was placed on the uncovered platform at the receiving station, then placed in baggage cars for transportation. No refrigerator cars were used. The total railroad haul on this line is about 40 miles. When the milk reaches Johnstown it is at a temperature of about 65° F., depending on the outside temperature. It is then unloaded onto an uncovered platform, and if the dealer does not take it away at once it is left in the sun to

get still warmer. One day after taking temperatures on arrival of the train, the inspectors returned in one and one-half hours and found about one-half of the milk still in the sun and the temperature of the milk was then about 15° warmer, or at a temperature of about 85° to 90° F.

Some of the milk shipped over the Pennsylvania Railroad comes a longer distance, but no refrigerator cars are used for the Johnstown supply and about the same conditions exist.

CITY MILK PLANTS.

There are about 15 city milk dealers. These dealers have their milk shipped in or hauled on wagons. The two large dealers in Johnstown handle about one-half of the city's milk supply.

The small dealers have no milk plant, as they take the milk as delivered from the farm and peddle it direct. Most of them have a refrigerator for storage of any milk left over. They bottle very little, and a few use ice.

The two large milk companies pasteurize and bottle all of their retail trade. One of these dairies has four creameries outside of Johnstown from which it draws some of its supply when needed. These plants are located at Indiana, Martinsburg, Woodbury, and New Enterprise, Pa. These plants do a considerable cream and ice cream business; some of them also pasteurize the milk before it is shipped to Johnstown, where it may be repasteurized and is bottled.

The sanitary conditions in these plants were found to be poor and no ice was used on the wagons. Apparently, from the bacterial results, the pasteurizing did very little, if any, good. The flash method was used at a temperature of about 165° F., and after pasteurizing the milk was exposed to much contamination.

The average score of all of these plants was 39.37. Some of the plants received a higher score than they really deserved, because they had no real plant but only a refrigerator and a place to wash the utensils, the milk not being brought to the plant.

The milk cans as returned to the farmer were in a very bad condition, as these plants do not properly wash them. Some of them rinse the cans, while others do not even do that; consequently when the farmer receives the cans they have sour milk in them and very bad odors. With a farmer's limited means at hand it is nearly impossible to get these cans in proper condition to again ship sweet milk in them.

One creamery at Friedens, Pa., ships about 100 gallons of milk direct to some of the small city dealers and stores.

STORES HANDLING MILK.

A great many of the stores sell milk. Some of these buy bottled milk, while others buy direct from the farmer and sell dipped or faucet milk. Most of this milk is sold as an accommodation to customers. Many of these stores have ice boxes or refrigerators to keep the milk cold. However, some of the stores have no facilities for keeping the milk at a low temperature and the cans or bottles are allowed to sit on the floor until all the milk is sold. These stores do not wash the cans or bottles. Much of this store milk is open to considerable contamination from dust, dirt, and flies.

The average score of the stores handling bulk milk was 46.11. The highest was 72.75, and the lowest 12.30.

BACTERIOLOGICAL AND CHEMICAL RESULTS.

Samples for this work were taken at as many sources as possible. The samples taken at the city cow dairies gave a low bacteria count, due to the sample being taken immediately after milking. In all, 163 samples of milk were examined, 115 being from producers and 48 from dealers. The maximum bacteria count was 319 million per cubic centimeter, and the minimum count was 3,650 bacteria per cubic centimeter. This sample was taken from one of the city cow dairies and it was fresh milk direct from the cow.

The average count of all samples was 1,699,587 bacteria per cubic centimeter. Two samples were sour when taken at the railroad station.

7 samples, or 4.2 per cent, were under 50,000 bacteria per cubic centimeter.

6 samples, or 3.6 per cent, were between 50,000 and 100,000 bacteria per cubic centimeter.

31 samples, or 19 per cent, were between 100,000 and 500,000 bacteria per cubic centimeter.

22 samples, or 13.5 per cent, were between 500,000 and 1,000,000 bacteria per cubic centimeter.

45 samples, or 27.6 per cent, were between 1,000,000 and 10,000,000 bacteria per cubic centimeter.

44 samples, or 27 per cent, were between 10,000,000 and 50,000,000 bacteria per cubic centimeter.

8 samples, or 4.9 per cent, were over 50,000,000 bacteria per cubic centimeter.

This table shows that 59.5 per cent of the samples contained over 1,000,000 bacteria per cubic centimeter.

The fat was only determined on 161 samples, and the average per cent was found to be 3.58. The minimum per cent was 1.2 and the maximum 5.

14 samples, or 8.7 per cent, contained below 3 per cent fat.

108 samples, or 66.1 per cent, contained between 3 and 4 per cent fat.

39 samples, or 25.1 per cent, contained 4 per cent fat or above.

The total solids was determined on 93 samples with an average of 11.68.

GENERAL SUMMARY.

The bacterial results and the inspection work show that the milk sold in Johnstown, Pa., is very poor. The scores are low and most of the milk has a bacteria count in the millions. This is easily explained by the fact that the city does no milk inspection work, therefore the general methods and ideas in use do not tend for clean milk. The general idea is that if milk is not sour it must be all right; then where the milk is pasteurized no particular pains are taken with its care. Our results show that pasteurizing did very little if any good. On the farms and in the city no particular methods or care are used to keep the bacteria count low.

1. There are 48 dairies in the city with an average score of only 26.84 out of a possible 100. On the whole, the city dairies were vile from a sanitary standpoint. While the bacteria counts taken on this milk were fairly low it must be remembered that milk produced at these places is delivered warm to the consumer; this milk is sold in the poorer sections, where there is usually no way to keep it cold until it is used, so that before it is finally consumed the bacteria count is probably extremely high.

2. The dairymen who operated farms and sold the milk from their own farms were in average condition for uninspected dairies. Their average score was 39.43 out of a possible 100.

3. Transportation facilities are very crude and there is an entire lack of care in handling the milk from the farm to the city.

4. The facilities for handling the milk in the city are very poor; many dealers have no equipment or means of refrigerating the milk or handling it properly. The average score of the city dairies was 39.37 out of a possible 100. There were only two plants inspected which were in fairly presentable condition. Pasteurization as carried on at the present time in Johnstown is a farce. This is shown by the fact that 52 farmers shipping milk to one of the dairies averaged 1,419,961 bacteria per cubic centimeter when the milk arrived at Johnstown, while samples taken from the milk supply handled by this dairy showed an average count of 18,337,500 bacteria per cubic centimeter, indicating that the milk was much worse after it had been "pasteurized" than it was before. Another large dairy did a little better, but the results obtained there showed a very incomplete pasteurizing process. Twenty-eight dairymen supplying milk to the latter dairy averaged 30,410,071 bacteria per cubic centimeter when the milk arrived at Johnstown, while the finished product as put out by the dairy averaged 3,150,083 bacteria per cubic centimeter.

5. A large amount of dipped milk is sold both from the wagons and from stores in Johnstown at the present time. Such a practice is at best insanitary, but carried on as it is in Johnstown it is a positive menace.

6. Bacteria counts showed that the milk averaged 1,699,587 and that 59.5 per cent of the samples showed over a million bacteria per cubic centimeter.

7. Aside from the bacteriological condition of the milk it was found to be in many cases lacking in the required food elements. Of 44 samples taken from milk dealers 29.5 per cent were found to be below the State standard for butter fat, while of 118 samples taken from producers, 22.9 per cent were found to be below the State standard for butter fat.

RESULTS OF THE INSPECTION WORK DONE IN JOHNSTOWN, PA.

Score.	City cow dairies.	Farm milk dealers.	Dairy farms.	City milk plants.	Stores.
0 to 10.....					
10 to 20.....	12			1	2
20 to 30.....	23	4	43		
30 to 40.....	12	8	117	4	
40 to 50.....	1	13	55	4	1
50 to 60.....		1	3	2	4
60 to 70.....			1		
70 to 80.....			2		1
80 to 90.....					
90 to 100.....					
Total ¹	48	26	221	11	8
Average score.....	26.34	39.43	36.06	39.37	46.11

¹ In all, 314.



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